

American Forests



AUGUST 1972



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"AUGUST 15, 1769"

A CONTEMPORARY OF NAPOLEON

By M. S. BENEDICT

THIS BATTLE-SCARRED VETERAN OF THE CRATERS OF THE MOON (IDAHO) WAS IN THE HEYDAY OF ITS YOUTH WHEN THE MAN OF DESTINY WAS MASTER OF THE CONTINENT.

HALF AS HIGH, IN FEAR OF FIRE, AND STRUGGLING AGAINST THE ADVERSITIES OF THE LAVAS, THE YOUNGSTER WOULD PROBABLY HAVE BEEN IMMENSELY HEARTENED BY NAPOLEON'S FIAT ON FOREST FIRES, AS EXPRESSED IN A LETTER TO ONE OF HIS SUBORDINATES:

"MONSIEUR LE PREFECT:

I am informed that a number of forest fires have broken out in the department, the administration of which I have confided to you.

You will please have the individuals convicted of having set them, shot immediately.

Also, if fires break out again I shall see to giving you a successor."

[Editor's Note: We can just hear some of the western rangers saying "At-a-boy, Napoleon!"]

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THE COST AND CURE OF EROSION

By ARTHUR M. HYDE

Secretary of Agriculture

SOME pages in human history reflect no credit upon mankind. First in importance is that page which describes man's treatment of the soil. Man was placed in a garden. He has transformed vast areas of it into desert. He has destroyed the cover on thousands of acres; he has laid waste wide stretches of pleasant country; he has made human life all but impossible in many places. The world is full of examples. Mediterranean nations now eke out a bare existence where once they maintained a flourishing civilization. China periodically suffers from famine brought about by man's own destructive hand.

We in America are fortunate. We still have time to choose between conservation at low immediate cost, and continued exploitation at an outrageous ultimate cost. We, too, have inherited a garden which we have fully possessed. We have been too busy with our works to take stock of our possessions, how they have been obtained, what has been or is now happening to them. It is time to give serious thought, from a national standpoint, to the land.

We have cleared and populated the Atlantic seaboard. This was done joyously if not recklessly. Now we find our cities looking for good drinking water, our agriculture suf-



Twenty-one million acres in the United States have gone entirely out of cultivation because of destructive soil erosion, declares Secretary Hyde, recommending as a means of prevention the alteration of cultural methods in farming, the maintenance of forest cover on critical watersheds, and the discontinuation of over grazing. An eroded area in Polk County, Tennessee, is illustrated above.

ferring because the fertile top soil is gone.

Later we took possession of the Trans-Allegheny region. Here again, we now find farm lands impoverished by erosion, and consequent abandonment. Expenditures for flood control and dredging are increasing tremendously as valuable lands and cities are threatened and as navigation is made more difficult.

We crossed the prairies and took possession of the more arid regions where we supplemented rainfall with irrigation and boasted that we had made the desert to bloom. Here again our methods have been heedless. By overgrazing the grasslands and by cutting and burning the forests, we have endangered the very existence of the engineering works of which we boasted. More, we are threatening the future of the people as ground waters are lowered and cities must go miles for their water supply.

Nevertheless, we are fortunate. There is yet time to reverse the destructive forces. We can not wholly escape the consequences of past action, but we can minimize them. And America can, if she will, show the world that man can possess, without destroying, the land. Erosion is merely the first cost that this country is paying for ruthless, unthinking exploitation of its land resources.

Erosion, as most everyone knows, is the eating away of the soil, caused, as a rule, by unrestrained water flowing down-hill, transporting stones, sand, and fine soil material, with its invaluable organic matter and available plant food, and depositing it on the surface of lower-lying areas or in the streams. Sometimes the finer soil is eroded by the wind and deposited on another farm. What is one man's loss, is sometimes another's gain. More often, it is the coarse sand, boulders, and stones carried down by moving water which are deposited on the fertile land of another farm. What is one man's loss is then another man's disaster.

This sort of erosion, largely man-made, can be measured in years. Contrast it with the centuries nature has taken to form the soil. According to the erosion experts in the Bureau of Chemistry and Soils, it takes nature not less than 400 years to build up one inch of the rich topsoil characteristic of the rolling parts of the Corn Belt. By planting corn continuously in that area, man has permitted erosion to remove that inch of rich topsoil in from ten to fifty years, depending on the steepness of slope. The average depth of topsoil in much of this region is only about seven inches. In other words, 2,800 years of soil-building by nature is utterly destroyed by man in little more than two generations.

Man achieves his fatal efficiency as a destroyer by processes which are entirely preventable or controllable. He cuts off the forests over large areas. He burns the ground cover, exposing the land to the washing of surface water. He overgrazes the original prairies and by destroying much of the grass vegetation, leaves the soil to the mercy of the running water; and he plows the slopes against rather than with the contour of the land.

Two sets of consequences ensue, one affecting our soil fertility, the other our water supply. Erosion removes not only the fertility of the soil on the farm and range, but removes the soil itself. As the humus soil covering and the moisture reserves of the soil are lost, fertility on the farm and carrying capacity on the range disappear. The tillable areas actually decrease because of gullying, and the expense of cultivation increases where erosion has begun to divide fields into plains and valleys. In many parts of this country, from ten inches to two feet of the topsoil have been removed in less than thirty years.

All the crops in the United States annually remove about six billion pounds of plant food from the soil. Erosion annually removes about twenty-one times as much. As a minimum, it has been estimated, some 500,000,000 tons of suspended material are discharged every year into the sea by

rivers. What reaches the sea is, of course, the finest, most minute material. The heavier sand, pebbles, and rocks are stranded somewhere along the way to form sand bars, new river bottoms, or new banks. For every ton of sediment that reaches the sea, at least two tons are stranded somewhere on the way. At a conservative estimate, our soil scientists say, one and a half billion tons of eroded material gets into our river channels, and into the sea every year. To replace all the plant food thus lost would at current fertilizer prices cost millions of dollars annually.

Already in this country 21,000,000 acres have gone entirely out of cultivation because of destructive erosion. This exceeds the total area of arable land in Japan proper. But far more than 21,000,000 acres has been impoverished by the slower type of sheet washing, which carries off a portion of unprotected slopes every time there is enough rain to cause water to run downhill.

The severity of erosion of course varies with the region. On the Piedmont Plateau, 51,000,000 acres in extent, about 2,600,000 acres once in cultivation have been rendered agriculturally useless by gullying. From four to eighteen inches of topsoil have been washed from about sixty-five per cent of the cultivated portion of the entire plateau. In the Appalachian Mountain area, which totals about 78,000,000 acres, between ten and fifteen million acres have been seriously eroded.

The southern brown loam region, totaling 17,000,000 acres of once very fertile land in Mississippi, Tennessee, Kentucky, Arkansas, and Missouri, has lost some of the topsoil from about 8,000,000 acres, and probably 3,000,000 acres have been permanently ruined by gullying. In the rich black belt of Texas, Alabama and Mississippi, erosion has been severe on 4,500,000 of the 12,000,000 acres. Of the 36,000,000 acres of the red plains of Texas, Oklahoma and Kansas, 8,000,000 acres have been severely eroded and about 1,200,000 acres utterly ruined by erosion. Even in parts of the north central region, notably on the silty soils of southwestern Wisconsin and southeastern Minnesota, an area of 10,000 square miles, the problem is critical.

The transportation of great masses of sand, silt, or rocks from one place to another is merely the first cost to the nation. Other and larger costs succeed that. Destructive erosion changes the water relationships of a whole locality. It works in this way: Suppose the whole Lake States region, for example, were covered with a concrete floor, slightly sloping towards the lakes and streams. Every drop of rain or melted snow would rush immediately towards the lakes and streams. We would have no ground water; no water for plants; no steady flow for waterpower; and the streams would rise rapidly after each rainfall and subside to nothing in a short time.

Normally, part of a rainfall may run rapidly off towards streams and lakes, but a very large part is absorbed into the soil, where it is available for the growth of plants and other life. It forms the sheets of ground water, from which we derive water for wells, and springs, and which keeps up the regularity of stream flow. It is this part of the rainfall which sustains life for both plants and animals.

Anything, therefore, that can catch the precipitation, retain it in the ground to be used by plants, build up the ground waters and prolong the period between its arrival on the surface and its ultimate passage to the streams, is beneficial to nature and mankind. If we could retain every drop of precipitation in the soil, we would not need to worry about soil fertility, about climate, about silt in the streams, or about floods and low stages in rivers and lakes. The capacity of the soil to absorb and retain water depends in considerable measure upon the presence of humus organic matter in the soil. If a forest is cut off and burned, if a field is allowed to lose its topsoil and the contained organic matter, the absorptive capacity of the soil is reduced.

Water falling on such soil runs off rapidly, picks up part of the soil surface and carries it to the streams as sediment. As a result farms lose fertility and soil, small streams are choked, streams are filled with mud, navigation on larger streams is made hazardous and costly, and, most important of all, the region becomes impoverished for water. The ground waters are lowered, wells dry up, and springs disappear. Even though annual precipitation remains constant,

the water level had dropped on an average fourteen feet during the eighty years of settlement.

Erosion is not of course solely responsible for this reduction in the underground water supply. The increase in population and corresponding increase in area of cultivated crops, the draft on the reserve water through wells, and through water taken directly from rivers and lakes, accounts for much of it.



Forestry, points out the Secretary, is not primarily designed to protect the forests as a source of wood supply. It has a vastly wider meaning, and a much larger importance when considered as a part of a broader program for the conservation and wise use of the landed estate of the nation. The above illustration shows how the root system of a tree holds the soil together.

we may have what approaches a drought, because the natural cycle of water and soil relationship has been shortened and disturbed.

The water resources or water capital of the country can be regarded as of two parts, the currency and the reserve. The rain, snow, and dew are the currency. The water accumulated within the ground, within reach of growing plants, forms the reserve. It is this reserve water supply which makes streamflow possible, farming feasible, and sustains production and population in the greater part of the settled country. The reserve water capital has been estimated to be equal to twenty-five feet in depth. This represents an accumulated ten years' rainfall.

When the first settlers pushed across the Appalachians into Ohio, Michigan and Minnesota, the pioneer homesteads were usually located near springs. After a decade or two many of the springs failed. Shallow wells were dug for domestic water supply. But these in turn failed and were either deepened or replaced by drilled wells. This much change is known to have taken place on the same homestead within from fifty to ninety years. Some years ago the Department of Agriculture examined about 11,000 wells in ten central States. In more than half of the wells examined,

Consumption of water for crop and animal production, and for the use of man and animals, however, accounts for only thirty per cent of the actual loss of water indicated by the lowering of the wells. The dominant cause of that depleted water supply is the loss of rain and snow water through surface run-off un retarded by adequate cover, particularly during the non-growing season. The depletion of our reserve water capital, upon which the agriculture of this country depends, is therefore intimately connected with the destructive floods and soil erosion we are coming to know too well in this country.

Let me complete this indictment of erosion by briefly listing these additional consequences: By depositing silt in the streams, erosion pollutes them, and menaces public health, fish life and fishing industries. Erosion can be held largely accountable for disastrous floods, on the one hand, and drought, on the other. Silt deposited in major streams can render great investments in power and irrigation reservoirs useless after a very few years. It can likewise impede navigation during low stages of water and aggravate flood conditions at high stages. We are familiar with the toll taken by both spring freshets and major floods in damage to roads, bridges, buildings, and to overflowed lands.

Much of this damage to our soil and our water supply can be prevented. We can so alter cultural methods in farming as to increase percolation of water into the soil, returning to the soil every available bit of organic matter, terracing and strip-cropping to impede the rate of run-off. Gully-ing can be prevented by soil-saving dams. Cultivation on slopes of more than a given steepness can be suspended. Pastures too steep to be grazed without erosion can be converted into woodlots, or at least allowed to have a rest from too intensive grazing.

We can make it a matter of general policy to discourage the cultivation or overgrazing of lands too steep to escape erosion except when protected by a cover of vegetation. It may be wise to develop our National Forest policy to provide for maintenance of a dense forest or grass cover on critical watersheds, having regional or national importance. When State and national finances permit, it may be wise to extend our forest policy to cover soils subject to excessive erosion. Similarly, grazing must be regulated on the western ranges of our remaining public domain in order to prevent disastrous erosion.

Once the few fundamental facts about erosion are understood, the remedies become perfectly clear. The situation is simply this: there is only one fundamental way to control navigation and regularity of streams, to protect fish, and to maintain normal climatic conditions and abundant crops, and that is by retaining in the ground itself as much as possible of the precipitation falling on the ground, and by retarding as much as possible its run-off from the surface of the soil. The Orient, notably China, provides the classic example of how whole regions can be devastated by the destruction of forest and resulting soil erosion. The Orient, particularly Japan, also gives us the classic example of how intelligent cultural and conservation methods, even upon slopes, can save every drop of water and soil fertility without the adoption of expensive fertilizer even after forty centuries of cultivation. From bitter experience the Orient has learned.

Probably no nation in history has thrown open its lands to settlement as rapidly and extensively as ours. Some exploitation, some "soil-mining" was probably inevitable. But its continuance is not inevitable.

About seventy-five per cent of all our land in cultivation is now subject to erosion in some degree. We know it is high time we stemmed that destructive tide. Because land scarcity has never been a problem with us, because overproduction is even now a blight on our agriculture, we can not therefore ignore soil erosion. There is neither economic profit nor social wisdom in permitting our land resources to be heedlessly destroyed, regardless of whether our land supply is scarce or abundant. Though there are millions of acres of arable land still unfarmed in this country, much of it would require costly drainage, irrigation, or clearing. As we now see the future, a sound national policy of land use does not call for expansion of our cultivated area, least of all by these costly means. It would be poor economy to allow our established farms to deteriorate simply because other lands could be had. The existence of vast areas of undeveloped land must be small comfort to the farm families and communities of the Piedmont and Appalachian regions where erosion has taken its full toll.

Erosion strikes at the vitals of civilization. It is the problem of the farmer, the fisherman, the builder of waterways and reservoirs, the business man, the legislator—the problem, in short, of every thinking citizen of the Nation. In part an individual problem for the farmer, it is also in large part a problem for community, state, and national action. In the permanent improvement of waterways and water supply, in the conservation of soil resources, in our attempts to achieve a balanced agricultural production, and to maintain an industrial civilization, our efforts must begin on the land.

It is for that reason that a sound national policy of land utilization—of which erosion control is a vital part—is so basic to a solution of our major agricultural problems. A wise land use program lies at the base of many of our problems—social, political and economic.

Our regional and national land use programs and policies may make or break any efforts to balance agricultural production to demand. The use we make of the land is inextricably bound up in our farm tax and credit problem. Local industries and whole communities have been known to flourish or to die, depending on whether the land supporting them got wise use or short-sighted abuse.

There are those, no doubt, who think of forestry as primarily a conservation program designed to protect our forests as a source of wood supply. Even from this standpoint forestry is amply justified. But forestry has a vastly wider meaning, and a much larger importance when considered as a part of a broader program for the conservation and wise use of the landed estate of the Nation.

Is the agriculture of large areas—even of whole states—in dire distress? Look first for causes in the kind, character, and economic location of the land. Perhaps a semi-arid prairie has been plowed ill-advisedly during a period of high prices, or a series of years of more than average rainfall and the attempt is being made to wring a living by cultivation from land which Providence designed for grazing. Perhaps a naturally thin soil has been devastated by too much or an unwise cultivation; so that the best of men and the best of methods could not wring an American standard of living from it. In the one case, the restoration of the land to grass, in the other its reforestation, may be the answer. In either case an answer must be found, if American agriculture is to be saved. This Nation has incomparable resources in land, labor, and capital. No less important is the intelligence with which these assets are utilized. The individual farmer will have to show resourcefulness in meeting changes in world economic conditions. He needs to adopt every economy of production. He needs to recognize handicaps, natural and economic, that foredoom him to failure. But it is no less vital that the Nation, in the interest of a profitable agriculture and a balanced national life, shall promote a wise utilization of our resources. Our traditional national policy of planless agricultural development should be replaced without delay by a program based upon such a utilization of our land resources as will yield greater economic and social values, will stay erosion and soil depletion, will preserve and conserve our land inheritance, and limit our agricultural plant to such a size as will supply the Nation's needs, without the ruinous blight of overproduction.





The surf thunders in at Scoville Point, on this Island of the Great Spirit.

MINONG--THE FLOATING ISLAND

Isle Royale, Soon to Be the Nation's Newest National Park,
Once Worshipped by Indians, Is Now Rich in Wild Life Beauty

By A. A. WEBSTER

THE Indians called it Minong and believed it to be a floating island where lived the Great Spirit. They seldom visited it, turning their canoes away from its rugged walls. Often, they believed, in fog or haze, the island would disappear, to be seen later in another location. But before the Indians, in some prehistoric age, Minong was a scene of great industry, for today in its rugged wilderness are remnants of old mining operations, dating back thousands of years. And today Minong has become Isle Royale, a sanctuary for wild things; tomorrow it will become a National Park, the newest in the great American park system.

Located in northern Lake Superior, eighteen miles from the Canadian coast line, which it parallels, the island is forty-seven miles in length and is from five to nine miles wide. It is spotted with lakes, having been formed by glacial and volcanic action. No roads traverse it, and there is not a

telephone or telegraph wire on the entire island. There are, however, many trails—mostly moose trails. These are readily followed, and with a chance of meeting the big fellows on the way, all of which greatly enhances the enjoyment of hiking. One might also see beaver at work, or if fortunate may run across coyotes, mink and red squirrels.

Right here, and without seeking controversial argument, I venture to take issue with the statements now and then appearing in print that the moose on Isle Royale have multiplied to such an extent that they are facing starvation. To those of us who really know the island these claims are utterly absurd, although unquestionably made in good faith and honest belief. It is true that near the various salt licks the browse has diminished, just as cattle and sheep crop closely all the grass near the barnyard gate; but it is equally true that outside the small radius adjacent to those salt licks and the trails lead-



A proud capture—30½ pounds of lake trout caught off Isle Royale.

ing to them no evidence of overbrowsing is to be seen. Although balsam is the principal winter food of moose in northern Minnesota it has scarcely been touched on Isle Royale, evidently because of the abundance of other foods. The island is almost entirely covered with forests, the conifers predominating. There are some comparatively small open spaces, usually having been caused by fires. These burns have grown up to bushes, shrubs and saplings, thus creating ideal browse. These conditions obtain over prac-

bers. A casual look around enabled me to show the ladies where two moose had bedded down the previous night, not more than twenty yards from their cottage. What they had thought to be fishermen were really moose. On the trails it is nothing out of the ordinary to see moose, sometimes feeding quietly. While their sense of hearing is excellent and their sense of smell extraordinarily acute, their eyesight is poor, and though they look intently in ones direction they do not seem to see one if he remains motionless.

At Rock Harbor, the only one of the four Isle Royale resorts located on the main island, close-ups of moose are not unusual. One morning while dressing, we were entertained by two moose feeding within fifty feet of our cottage; and another morning at the same cottage we were awakened about five o'clock by the grunting of a moose which proved to be just outside the window. Many times along about seven or eight o'clock in the evening moose are seen near the cottages; and one morning as a dozen or more guests were at breakfast two moose sauntered leisurely across the clearing not over twenty feet from the front windows of the dining room, creating much interest and excitement. Often when rowing quietly along the shore, following its irregular contour, I have seen moose feeding in the water and sometimes swimming among the smaller islands or across some of the many bays; and if one moves cau-



The contrasting beauty of the scenery at Isle Royale is brought out in these typical illustrations,— Above — the rugged shore line of Rock Harbor, and to the right—the calm and peace of the lovely islands in this sanctuary for wild things.

tically the entire island and as its land area is 123,000 acres, and an estimate of 1,000 moose is liberal, this allows 123 acres for each moose. Anyone acquainted with the moose problems knows this to be a good size pasturage, several times the ratio in many of the northwestern moose areas.

Close observance and intimate acquaintance with actual conditions relating to the various features of the moose question for ten years has satisfied me that nature is caring for her own in a most excellent manner. This cry of over-population, frequently raised elsewhere as relating to the animal and bird kingdoms, is nothing new and usually has emanated from those who wish to have an open season declared for hunting purposes. To me and to many others it is a great pleasure and a wonderful experience to be able to visit a place so comparatively close to home and watch these great animals often at fifty feet feed entirely unafraid.

This pleasure is not only for the experienced. Anyone with a little watchfulness and patience can see them. One day last summer, at Rock Harbor, two ladies remarked that though they had been there for several days no moose had come their way; also that fishermen walking past their cottage in the early morning hours had disturbed their slum-



tiously and without noise it is often possible to get within a few boat lengths of them.

Some years ago caribou were to be found on Isle Royale but they were never very numerous and have gradually disappeared, none having been seen since 1925. Whitetailed deer also were sometimes to be seen, the State of Michigan having placed a few there twenty years ago, but they too are gone. As a matter of fact, no moose were on the island prior to 1912, and with no means of getting there. The common belief that the lake freezes solidly is erroneous, for the heavy gales and seas that prevail during the winter make freezing extremely rare. On the north side of Isle Royale the distance is but eighteen miles to the Canadian shore, and while this water freezes out for five miles from each side it never has, so far as is known, frozen entirely across except

in the winter of 1912. It is supposed that a number of moose crossed on the ice that year and necessarily remained as the ice bridge soon broke up. Evidently conditions on the island were to their liking for, unlike the caribou and the deer, the moose have thrived and multiplied until now they are numerous.

Various estimates place this number from 800 to 2,000 moose, but those who are best acquainted with the island declare 1,000 is the maximum number.

There are no poisonous snakes on the island — no snakes at all save the tiny and harmless garter snakes. Neither is there any poisonous ivy or other plant life to be avoided. Thus one is free to go about without danger, there being no wild animals one need fear, the moose being harmless save during the mating season in October and when with their calves in the spring. Of bird life there are over forty varieties which breed there, while seventy or more other kinds make the island a stopping place in their migratory flights during spring and fall. Among the different species which nest there are eagles, herons, gulls, ospreys, loons, ducks, crows, owls and hawks, while among the smaller birds and songsters are thrush, robins, hummers, woodpeckers, song sparrows,



His sanctuary and he knows it—it is an unforgettable experience to the uninitiated who visit this island sanctuary to be able to watch at such close range these great animals,—apparently unafraid.



At the breakfast hour one morning this moose created a small riot of delighted excitement by sauntering leisurely across the clearing not twenty feet from the front windows of the dining room.



It is often possible to see moose feeding unconcernedly in the shallow water, but our boat frightened this calf and it made rapidly for the shore.

cedar waxwings, flickers, kingfishers and many other well known varieties.

One of the interesting experiences frequently met with is that of seeing the loons, usually in pairs, and always very wild and unapproachable. The least disturbance causes them to cry out in a harsh and discordant way

which has sometimes been described as similar to maniacal laughter. Often when stalking moose the cry of a loon from some nearby lake has caused the moose to quickly vanish and thus spoil what otherwise might have been an excellent picture. To observe what might be called home life of the many varieties of water fowl is also very interesting. Not the least interesting among the feathered inhabitants are the herring gulls, and a visit to some of the small and nearby islands upon which they nest and breed is sure to be very entertaining.

For the fishermen there is a diversity of sport. Where the inland streams empty into the big lake large speckled trout abound; and at the heads of bays are northern pike. In the smaller inland lakes perch are caught in abundance. But it is out in Lake Superior where one gets a real thrill. There is the habitat of the famous lake trout. These trout are caught by trol-

(Continuing on page 462)



The history of the Mayas, founders of a great pre-Columbian civilization in Central America, is slowly emerging from the tropical jungles which have buried it for more than 300 years. It is of direct interest to foresters because of the important effect of ecological principles on Mayan agriculture. The earliest date deciphered in the Mayan region was June 16, 68 A. D., found on a stone stela in the ruined city of Uaxactun, shown above.

ANCIENT MAYAS BURNED THEIR FORESTS A PRACTICE THAT MAY HAVE BEEN THE SOURCE OF THEIR DECADENCE

By ROBERT M. RILEY

Photographs by courtesy of the Carnegie Institution of Washington

FOURTEEN centuries before Columbus' voyage of discovery, forest clearing for agriculture presented its problems to an American race. The history of the Mayas, founders of a great pre-Columbian civilization in Central America and southern Mexico, is slowly emerging from the tropical jungles which have buried it for more than three hundred years. This history is of direct interest to foresters and others because of the important effect of ecological principles on Mayan agriculture, and ultimately, it is probable, on the very existence of Maya centers of culture.

The earliest date deciphered in the Mayan region was June 16, 68 A. D., the date having been found on a stone stela in the ruined city of Uaxactun. From this date to the time of the Spanish conquest in the 16th century, more than forty Mayan cities were founded, the largest and perhaps most important of which was Tical, estimated to have had a population of a quarter of a million or more.

Examination of records left by them in sculpture, architecture and hieroglyphic writing and contemporary writings of Spaniards and Mayas educated by Spaniards, indicates that these people had developed a truly great ability for scientific and artistic attainment. Their calendar, considered

by some students of archaeology to be the greatest scientific achievement of any race on the same cultural level, was more accurate than the Julian calendar used by Imperial Rome. It was so accurate that in the course of 3,800 years there would be an error of only about two days. That a primitive, isolated people could develop the skill in mathematics, astronomy, and logic necessary for the working out of such an accurate system of chronology, is almost unbelievable. Incidentally, three dates have been found recording periods of more than a million years—the one at Tical is for five million years. Apparently the Maya conception of the age of the earth was more logical than any other up to the 19th century.

The Maya sculpture and architecture, as exemplified by the ruins of Yaxchilan, Copan, Uxmal, Chichen Itza, and many other cities, was of a high technical and esthetic order. This fact is more remarkable when one realizes that their stone carving was done without the aid of metal tools.

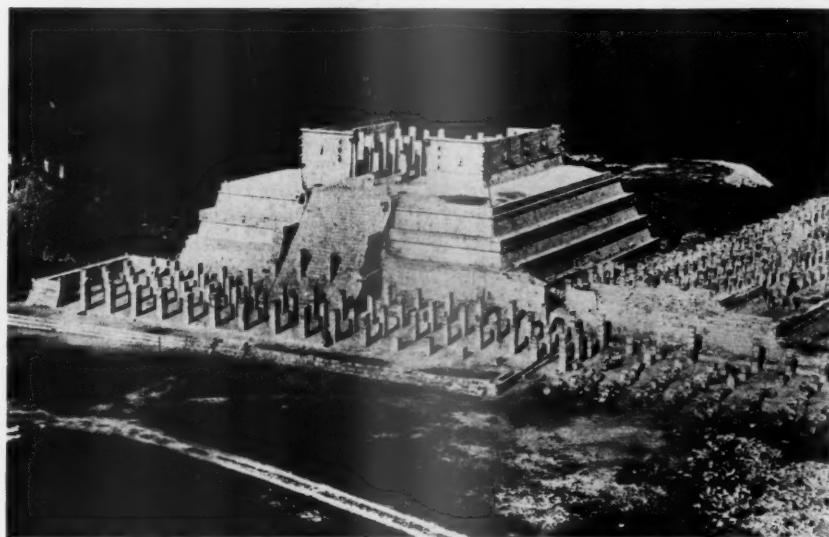
Practically the entire Mayan culture—art, science, and religion—was built up around agriculture and its vital importance to the race. In fact, it is possible that the Mayan civilization never would have existed had it not been for the

discovery and domestication of the maize plant, or American corn. Without this staple crop, there would probably have been no leisure class to work out the problems of science and mathematics, nor would there have been available the surplus man power of the lower classes to do the manual labor of erecting the temples and other buildings.

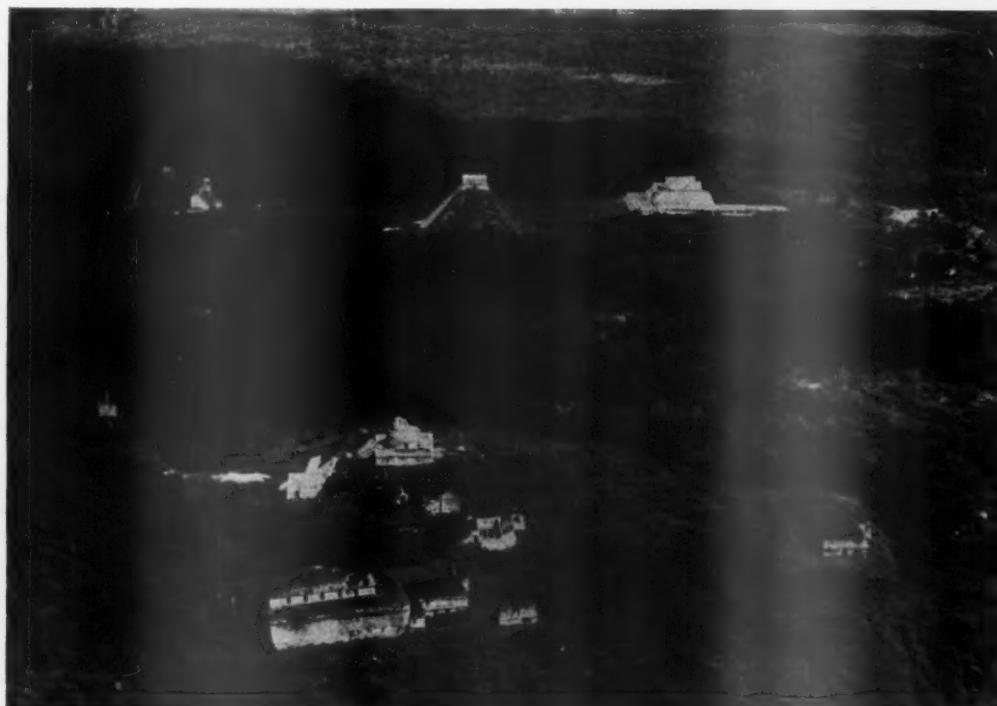
Their agriculture was of a simple sort. It depended on the natural fertility of the soil built up by the original forest cover. In December or January the head of the Maya family selected an area of forest which he considered suitable for his next corn crop. He then joined with several of his neighbors for the clearing operation. Before actual work started, it was considered necessary that the group spend a night in vigil and fasting, in prayers and sacrifices to the gods of earth and forest in order that the work might receive divine approval. Then the group went to the *milpa*, or field, of each of the members in turn, and started clearing. That the clearing was a task of no mean proportions is indicated by the fact that stone axes were the only tools these people had. The larger trees were killed by girdling; the slashings were left to dry under the

hot spring sun of the tropics. Early in April, after offerings to the wind gods, and prayers that they "play with the flames" and assure a good burn, the slash was fired. Just as the rainy season started, the farmer planted the seed by making a hole in the ground with a sharp stick, placing a few maize grains in it, covering the hole and heaping a little dirt over it with his foot. From then on until the harvest time the farmer was free for other pursuits, probably for conscripted labor on buildings or other public works.

After the crop was harvested, the area was likely to be unfit for another planting the next season because of the thorny scrub that grew up after the fire. It was then necessary that the land lie idle for from two to six years until there was a sufficient accumulation of brush for another fire, when the process was repeated. At (Continuing on page 480)



A close view of the Temple of the Warriors at Chichen Itza as it now stands after evacuation and repair by the Carnegie Institution of Washington.



The ruins of Chichen Itza, believed to have been founded not later than 530 A. D. by colonists from the Old Empire region of the Maya to the south and southwest. In this region, the author points out, Maya culture was built around agriculture, which depended on the natural fertility of the soil supplied by the original forest cover. When this fertility was destroyed by the practice of burning the forests, he maintains the Mayas started on their period of decadence.

TWENTY YEARS IN A BEAVER POND



Upper, the dam as it appeared in 1910, surrounded by grass, bushes and trees.

Lower, as it appeared twenty years later, after a cloudburst and flood had wreaked havoc.

By EDWARD R. WARREN



If you were to follow the trail through to a certain basin on the northerly slope of Double Top Mountain in Gunnison County, Colorado, at an altitude of 9,000 feet, you would find a small beaver pond surrounded by lodgepole pine. If you were accustomed to beaver ponds the site would not strike you as unusual; but if you had visited the pond twenty years earlier, had made pictures of the dams and lodges, you would be embarking upon an adventure privileged to few people. For before your eyes would be written the twenty-year history of life in a beaver pond.

I first saw it in 1910, recording much of it with my camera. I did not see it again until 1930, when the thought occurred to me to locate the same points where the earlier pictures were made and to let the camera mirror the twenty-year changes. This I did in 1931, in-

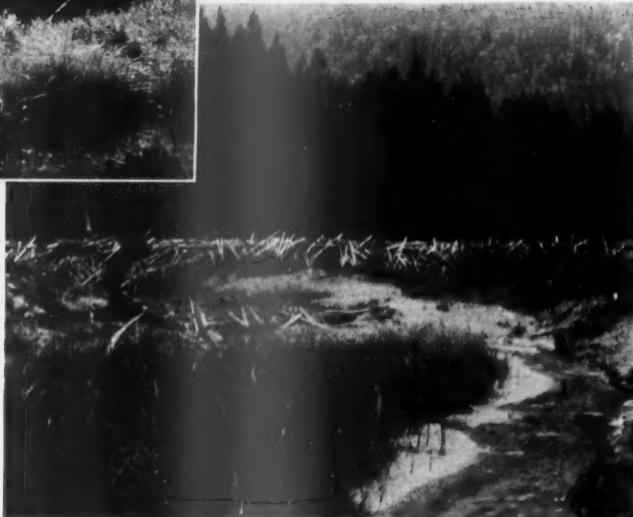
sofar as was possible. At the same time I checked my notes of twenty years' standing against new ones and found many interesting things.

In 1910 I found the dam to be seventy-five feet long, and ten feet high on the face. It was constructed largely of pine sticks, some so long that they projected five feet above the top of the dam. The pond was irregular in shape. The dam extended from the north bank to a low ridge with a few pines on it. On the south side of the pond was a bank lodge. My 1910 notes told me that it was sixteen feet wide and twenty feet long. In 1930 it was twelve feet wide and twenty-two feet long. Many trails were on the banks, and my notes informed me that the beavers were going up through the pines for aspens. They were also going up to a smaller pond, cutting aspen there, and dragging



the logs down the hill to the main pond.

Below the pond in 1910 was a small stream flowing down a narrow gulch. There were bushes along the stream and six small dams and ponds at irregular intervals. When I started up this gulch in 1930 I was surprised to find it entirely changed in appearance. At its lower end were many stones and boulders, evidently washed down, while farther up I found a barren rocky bed, but no bushes and no dams, though the



Upper, a close-up of the dam and wilderness surrounding it in 1910.

Lower, as it looked in 1931, not in as good repair and considerably lengthened.



Upper, the lodge on the south side of the pond as it appeared in 1910.



Lower, as it looked after two decades, sunken, and showing the effects of age.



The dam from the right end in 1910, seventy-five feet long and ten feet high. It is constructed largely of pine sticks.

stream was still there, meandering through the desolation. The cloudburst, or whatever it was that caused this destruction, had happened about four years before. Evidently the dam had been strong enough to withstand the flood, which must have overflowed and cleaned out everything below. The bottom of the remnant of an old dam on the right bank was six feet above the water in the stream, showing that the gulch had eroded considerably at that point.

There were not many changes around the shores of the pond, except that the trees

had grown larger and taller. The dam was not in as good repair as when first seen, and had been considerably lengthened.

It was about the westerly end of the pond in 1910 that the beavers appeared to be most active. The forest did not approach the water as closely there, and along the shores marsh grass was growing. A few trails were to be seen, and at the extreme west end was a small bay and two short canals, from the ends of which trails led up through the timber. Beaver-cut aspen sticks were in the water at these places, both peeled and unpeeled. At the mouth of the last canal a regular road went up through the pines, branching out into two smaller ones. Aspens were being cut there.



The dam from the right end in 1931, one hundred and twenty feet long, the last thirty feet being built of sod and mud. Note that the long sticks projecting above the top have vanished.



Upper, the upper pond from the west end in 1910. Aspen trees can be seen at the farther end of the pond.



Lower, the same view in 1931. The aspens have been harvested by the beavers. The increased growth of the conifers is very noticeable.

In 1931 I followed one of the trails up to where it ended. Down this slope the beavers were felling aspens, lopping off the branches and dragging them down to the pond. Some small aspens had been cut and carried away bodily.

The lodge showed the effects of age; the material looked old, and it was sunken, especially the part extending into the water. It was still inhabited, however.

At the upper pond there was a lodge which had not been there in 1910. Between the two ponds the ground was well covered with brush, and there were no trails such as I found in 1910.

In 1931 I found a trail which extended from the north shore of the pond across to the steep bank of the gulch. For most of its length it had a layer of the long swamp grass laid lengthwise, flattened and matted as if something had been dragged over it. This was, and remained, a puzzle, for I could see no indication that the beavers had been down it.



The queer trail with swamp grass laid lengthwise, flattened and matted as if something had been dragged over it.

Land Utilization and the Unemployed in Holland

By ARTHUR C. RINGLAND

A FEW months ago, I had opportunity to see something of what the little country of Holland is doing to put its unemployed people to work in the fields of forestry and land reconstruction. Holland, like most other European countries, has an acute unemployment problem, and I was struck by the fact that it seems to be meeting this problem without, as yet, resort to bread lines.

Even in normal times unemployment is of concern to the Dutch people, due to the fact that Holland has a population of about one person to each acre of area.

Its 8,000,000 inhabitants occupy a landed estate about equal in size to Maryland. The development of agriculture, horticulture, animal industry, and forestry to support this population, therefore, demands the intensive occupation of seventy-five per cent of the soil

area. Moreover, the increase of population is about 100,000 annually with some 35,000 persons graduating into the ranks of workers each year.

For the past twenty-five years Holland has been engaged in a great and coordinated public and corporate work of land planning and utilization with the object of converting waste and idle lands to profitable uses through reconstruction, agriculture, and forestry. Even now these lands approximate one million acres in area. Following the World War the work received impetus. Today, to check the rising number of unemployed, the work is under way on an expanded scale and the dramatic spectacle may be witnessed of pioneer development of the land in a country as intensively cultivated as any in Europe and with the rich historical background of centuries. In a number of places in this small country, there are no signs of culture or human activity to break the rim of the horizon, yet in the soil beneath has been found the armor of Roman soldiers and from elevations of but a few feet one may view the church spires of ancient towns. Many of these barren areas are now scenes of intensive activities comparable to the opening of a new land district with its influx of eager settlers. In

places hundreds and thousands of men are engaged in reclaiming the waste lands, constructing dams, dikes, canals, ditches, and roads; straightening water courses; fixing the drifting sands; deep-ploughing the soil; sowing the first crops of rye and clover; establishing forest plantations; building modern farmhouses and model villages.

While the scene presents all of the stimulation of pioneer effort, there is yet a difference. Here there is no mere exhaustion of the potential resources—to exploit and move on

to other fields. All effort is directed and plan-wise, looking to the building of a permanent civilization. Thus every farm unit will have its canal and road, every settlement its forest plantation, every village its tree-lined streets, parks, and a community center. The reclamation of some areas is almost complete—land that was under sea-water only two years ago is now supporting crop and community life, schools, and churches! Truly a modern Atlantis! Other areas reclaimed from the higher heather and peat lands or from the fixation of drifting sand are stocked to vigorously-growing plantations of useful trees.

The great projects of afforestation and agricultural reclamation now under way are generally of a public or corporate character. The public projects are financed through loans by the state to political subdivisions at low or sometimes no interest charges. For example, a considerable aid to the unemployed is a law

which permits communes to establish forest plantations through state aid. The state provides loans maturing in fifty years without interest charges and to a maximum of eighty per cent of the initial cost of establishing the plantations during the first two years and in total not to exceed eighty florins or about thirty-two dollars an acre. Nearly all of the communes in possession of idle lands—and there are over fifty in this class—are taking advantage of this law and planting of forests is energetically going forward. The present plan provides for the planting of approximately 35,000 acres with state aid, involving a loan of over one million dollars if full advantage is taken (*Continuing on page 474*)



Adequate and comfortable barracks are erected for the workers recruited from among the unemployed.



A tree-planting gang in the field. The soil is prepared by use of hand tools rather than by machines.



The first mile of the trail of this elusive stream is up,—straight up.

ON THE TRAIL OF LOST RIVER

By ANNA WORTHINGTON COALE



The Tip Top House, its three stories chained to the rocks with gigantic cables, offers cheer to the traveler in the way of real beds, hot supper and pleasant company. Its guests from the camps enjoy the evening around the fire, exchang-

THE trails of the White Mountain region offer much that is of romantic interest, but perhaps none provide more thrills for the boy and girl campers who inhabit that region in summer than the one that leads to Lost River.

In order to share those thrills, one should follow a party of eight girls, including the councilor, from a camp in New Hampshire as they set out on this trail, which leads over Mount Moosilauke and into Kinsman Notch and is part of that longer Appalachian Trail that is being constructed from Mount Mitchell in North Carolina to Mount Katahdin in Maine.

The first mile of the Glen Cliff trail, straight up without variation, is a real test of patience, endurance and breathing capacity. But forging ahead with characteristic good humor they presently get their reward as the trail begins to wind and they gain their second wind. The first mile is soon forgotten as they come out of the woods, now above the tree tops where they turn to look at the world below; and finally on the carriage road where looms ahead the Tip Top House of the Dartmouth College Outing Club, maintained in summer for the accommodation of hiking parties.

The night on the mountain is no small part of the experience. From the wind-swept summit of Moosilauke one can look into four states. On one side is the Connecticut River, winding its way through the peaceful valley with the Green Mountains beyond and here and there glimpses of the Adirondacks. On the other side in an endless chain are the rugged peaks of the White Mountains with Washington, Jefferson and other familiar members of the Presidential Range plainly visible.



The girl hiker reaches a vantage point—
top o' the world in this part of the country.

ing songs with other camps, some venturing out into the cold to watch the moon rise and the glittering lights below. They long remember the night under warm blankets with the wind howling by and the experience of watching the sunrise from the mountain top.

Morning brings good-byes to the hut masters and the descent down the Beaver Brook Trail into Kinsman Notch, that thickly wooded tract where the slopes of Kinsman and Moosilauke meet to celebrate the glories of the forest. On the way down they come upon the series of Cascades where Beaver Brook starts to tumble and to express its joy at its arrival in the lovely green valley on its way to the Connecticut River. A few minutes later the party emerges from the woods on the highway that leads to Lost River. Here they are joined by the truck from camp bearing food supplies and a few of the stay-at-homes.

The scene at the entrance is in sharp contrast to the one they have just left. Here crowds of tourists in city clothes swarm the paths, bearing out the report that upwards of fifty thousand people visit Lost River each year. In the foreground is a large sign bearing the name of the Society for the Protection of New Hampshire Forests, the organization which controls Lost River and which was responsible for bringing into public ownership valuable tracts of this White Mountain region. Bordering on the path is the Nature Garden where plants native to the region have been placed for the instruction of visitors. Its winding paths lure the tourist intent at the moment on seeing Lost River.

The party, camp shod, easily pass the tourists not so prepared and soon find themselves on the wide porch of the administration building looking through the gorge at the blue

mountains in the distance. Inside the long building is a counter where may be had post cards, ice cream cones and other refreshments. Tourists in overalls are emerging from the dressing rooms prepared for the trip down the gorge. The Society has a supply of photographs, books and pamphlets telling the story of Lost River and the series of caverns made by a glacial stream perhaps twenty thousand years ago. That great ice sheet, which was two thousand years receding over the length of New Hampshire may have rested here as long as three hundred years, all the while pouring off a stream laden with silt which carved out a wondrous river bed and wore the deep pot holes found at the bottom of the gorge. The largest of these is twenty-five feet in diameter and thirty-five feet high. At the end of the glacial period came an earthquake which hurled down from the mountain side gigantic masses of the cliff, covering up the river bed and resulting in the caverns and crevices for which Lost River is famed.

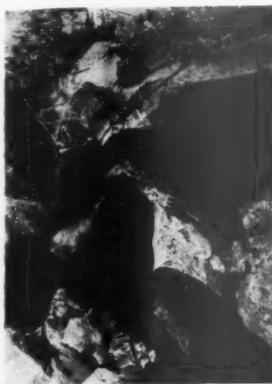
The start down the river is soon made, a guide escorting the party to the Look Off, an observation point above the tree tops where they get a general picture of the strange jumble that was once a perfectly good river bed. This guide passes them on to another, in relay fashion. The guides, all of them college students, are stationed along the gorge to give help and instructions where needed. They proceed to the first cavern and, peering down into its depths where the pole ladder begins, they can read the inscription on the wall—"Hall of Ships." Down the ladder they go to a depth of forty-eight feet with a speed that would give concern to the staid tourist. They inspect the huge boulders that look like parts of ships, one of them with rudder attached, hanging



The trail leads over Mount Moosilauke and into Kinsman Notch—through unbelievably beautiful country, luring the seeker of Lost River.

from above. The next one of the same construction is Shadow Cave, made of four immense boulders inverted and hanging from above with their points downward. What freakish things that earthquake did in its rough play with the river

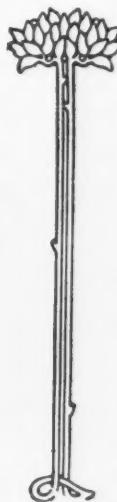
where a tortuous passage makes necessary instructions from the guide. At the end they come out on hands and knees through Fat Man's Exit. The next is Elysian Land, with its restful quiet, profusion of ferns and shrubs and a gurgling



The "Pot Hole"—mysterious entrance to the subterranean passage of Lost River, with its caverns and crevices.



Peering down into the first cavern in the gorge. One reaches by pole ladders the "Hall of Ships."



In and out through the caves rapidly runs the river—up another ladder and one reaches the mammoth block known gruesomely as the "Guillotine."



Crawling on hands and knees, thrills enough are to be found in the "Lemon Squeezers"—to be negotiated only in a prone position!

bed! Here the river makes its first appearance, flows through and goes out again in a noisy three-foot fall. This, the guide explains, is not the original river, which has disappeared long ages since, but a smaller one that came to take its place in the game of hide and seek through the caves. Up the ladder again, through a small opening and over a pole bridge and they come to the Guillotine with its mammoth head block above, poised and ready for duty. Looking back, one can see the Trip Hammer poised in an opening in the rock.

In the Judgment Hall of Pluto the river appears again, splashing over a twenty-foot waterfall within the cave. From this they go to the Bear Crawl, scrambling through that opening; then up a ladder and over a long walk, past the Queen's Bower, a crescent-shaped recess in the fern-covered rock. The Dungeon gives them more crawling on hands and knees through a narrow opening below the King's Chamber, where they view by candle light a beautiful sparkling pool. Crawling again under broken boulders, they enter the Hall of Lethe, where the stream tumbles noisily.

At last they come to the camper's chief thriller, the Lemon Squeezers. A lighted torch shows the way through a V-shaped opening between massive boulders which has to be negotiated feet first and followed through in a prone position

stream; then the Center of the Earth, where they gaze into the Giant's Cauldron; out again and on to the Giant Pot Hole, said to be the largest one in granite anywhere in America.

But still there is more to come. Sliding between the Parallel Rocks they hop back over three pole bridges, down two ladders and into the Cave of Silence. Here the river is lost. Leaving the silence, they come to the last and most complicated cave of all, the Cave of Lost Souls. It involves some lively scrambling, but the party does it ample justice and then passes out to the Bridge of Sighs to view Paradise Falls. The campers owe much to the Society for the Protection of New Hampshire Forests for preserving these wonder spots in the White Mountains. The next visit is to Franconia Notch, which contains more wonders, among them the Old Man of the Mountains. This beautiful Notch has been brought into public ownership through the Society's efforts within the past few years and the Old Man, his domain spared from the woodman's ax, has been made a memorial to the men of New Hampshire who have served the State and Nation in war.

Piling into the truck after a lunch in the grove, the campers leave the remainder of the trail for another trip and are speeded on to the Flume, the Great Stone Face, the Basin, the Pool, and the other attractions of this wonderful region.



And finally out—into "Elysian Land"—where the Lost River trail leads into calm and restful quiet—winding through the beauty of a fern and flower-covered land.

HOW MICHIGAN IS MAKING BETTER TROUT STREAMS

By JOHN R. GREELEY AND CLARENCE M. TARZWELL

THE improvement of trout waters must rest on two fundamentals. One needs to know the environmental requirements of trout, and how these requirements can be provided. Since streams differ in the degree to which they meet the different needs of trout, it follows that all improvement work should be planned to meet the particular needs and conditions of each stream. Obviously no one type of improvement will be a panacea for the ills of all streams.

The requirements of all trout are cold water, good shelter, sufficient food and adequate spawning places. Unless its water is relatively cold and free from large amounts of harmful substances, there is no chance to make the stream yield trout. Shelter is probably the easiest requirement to meet or to increase. Food and spawning conditions, however, may also be improved.

The basic idea of stream improvement is to change unsuitable conditions sufficiently to result in conditions satisfactory for trout. A stream will not provide good trout fishing unless all the requirements of the trout are met. Good water, sufficient food and adequate spawning facilities will not yield many trout,—unless shelter also is provided. Many of our streams are seriously lacking in cover; others lack spawning grounds, and so on. The natural deficiencies must be overcome or remedied.

Usually the most obvious and most easily corrected deficiency in our larger trout streams is lack of adequate shelter. Many of our larger streams have been cleared of obstructions to facilitate the driving of logs and pulp wood. Then sand, the smothering enemy of stream life, has been blown or washed into streams since deforestation and attempted farming have changed natural conditions. Holes have thus been filled, the depth of water decreased, and the insect life destroyed. In places wide sand flats have resulted. These not only yield few fish, but also jeopardize the entire stream by

The general problems involved in converting trout streams from poor to good fishing waters, were discussed in the July issue of *AMERICAN FORESTS* by Dr. Carl L. Hubbs, Director of the Institute of Fisheries Research, University of Michigan. The present article takes up in more detail the methods which are being used and developed to restore the trout environment of Michigan streams and to provide sportsmen with better fishing. The authors are also members of the staff of the Institute of Fisheries Research and are in direct charge of the stream restoration work.—Editor.

exposing the water to warming. The task in such streams is to add cover, to deepen the pools, to hold the sand in bars and to retard the inwash of new sand into the stream. It has now been demonstrated, that not only sand stretches, but also uniformly shallow gravel areas, heretofore without trout, may be made to yield good

fishing. When the constructions are intelligently planned and soundly built, they appear capable of withstanding for many years not only the ordinary wear and tear of stream action, but also the stress of floods and of ice. The costs of such improvement work as have been done in Michigan are very moderate, varying with size of stream, type of bottom, accessibility of materials, and the degree of improvement needed. Most of the devices used, made of material secured in or along the streams, have cost from one to four dollars each. Labor is the predominate item, as a few cents' worth of wire and staples is all that one ordinarily needs to purchase outright.

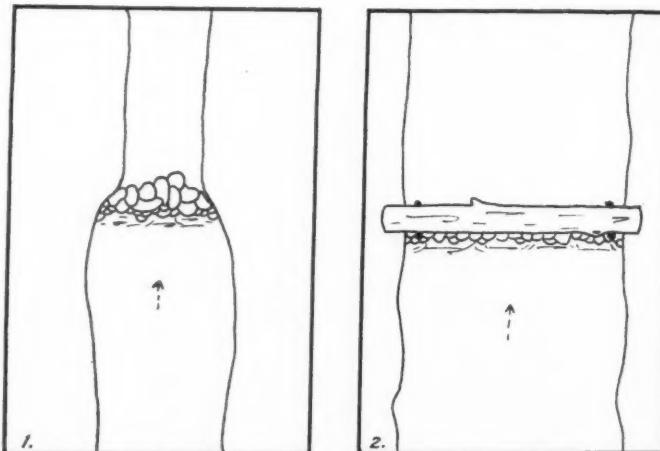
The materials needed for trout stream improvement have been in general abundantly supplied by nature and by the lumberman. Logs, dead trees, stumps, poles and brush, all can be used to advantage, most easily and satisfactorily when

waterlogged. Large stones and gravel are very useful, where the stream bed is firm enough to make a foundation for stone work. Construction plans should be adapted to the type of material most easily obtained.

To work the raw materials into the finished product, a crew of four or five men and a two-horse team has been found most efficient, but two or three men with the team can accomplish much. The team is needed for gathering material and in placing the heavier logs and boulders. If a stream is small, one horse is sufficient, and for very small streams,

no horse at all is required. If stone is to be hauled any considerable distance, a stone boat is desirable.

The following are the tools we have found necessary for



Dams are used in streams with steep banks to make deep pools. Two simple types used to good advantage, as described by the author, are shown above. Fig. 1—the stone dam, and Fig. 2—the log dam.

efficient stream improvement work: long picks with twenty-five inch heads; long-handled pointed shovels; post mauls (sixteen and thirteen pounds); hammers; extra-large wire-cutters; axes; cant-hooks; pike-poles; hand, cedar and cross-cut saws; six-foot crow-bar; portable platforms on which to stand while driving stakes; long chain for dragging logs with team; block and tackle for starting heavy boulders; cable for drawing boulders. In the way of material, we use No. 9 smooth galvanized wire for binding log work together, and No. 12 smooth wire for binding top of stakes; also a supply of two-inch galvanized staples and eighty-penny spikes.

To insure permanency, all log work should be securely bound together by heavy galvanized wire, and then wired to stakes driven several feet into the stream bed even though this entails long and hard labor. The stakes should be five to ten feet long, carefully selected of good wood—oak or tamarack are favored by our men—and should be wired around the head to prevent splitting. It is advantageous to prepare a goodly supply of stakes in advance. The constructions should be kept nearly flush with the summer water level, because wood when completely submerged lasts longer, and because this allows flood water and ice to slip over the top. Unless a refuge area is desired, the constructions should be planned in such a way as to permit fly-fishing.

We make an effort in our work to maintain the streams in natural appearance, in fact to add to their charm, remembering that many fishermen, and others, frequent the stream to avoid the artificiality of modern life. If the stakes are set low and the wires concealed, the barriers are often mistaken for natural jams. We avoid the cutting of live wood along the streams. To obtain the maximum benefits from stream improvement work, one should first study ("survey") the entire stream, then build up an improvement policy and program for the whole course. For the sake of efficiency, one should, however, concentrate the work on one section at a time. It is best to proceed downstream, so that each new improvement can be properly placed in the current, as it is altered by the work

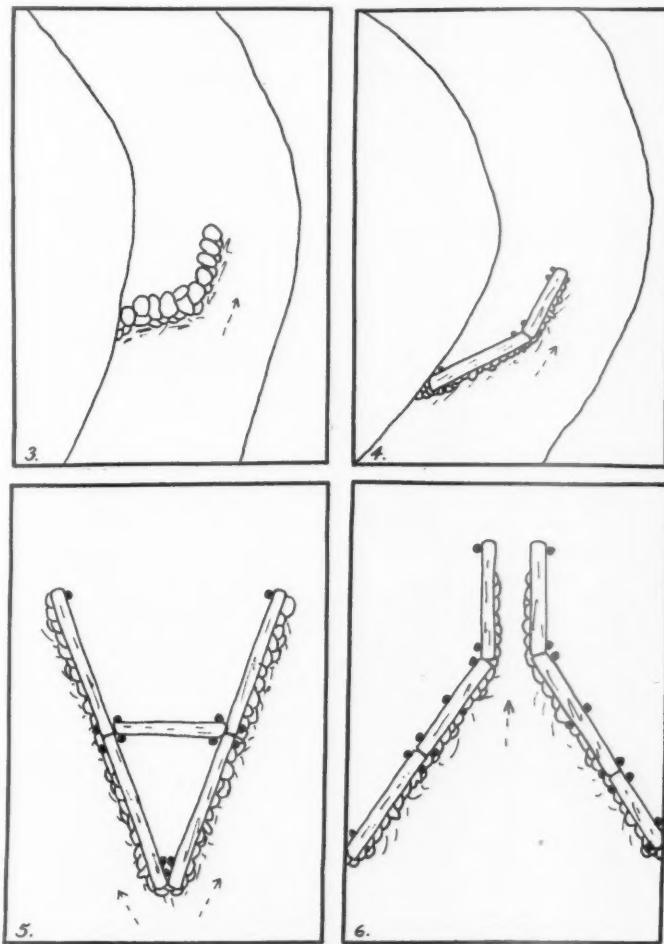
just completed, and so that the unused material can be floated downstream as the work proceeds.

Dams have been widely used to make pools suitable for large trout. The ponded water above the dam, as well as the fast-water pool below the spillway, usually forms a good trout habitat. Conditions in most Michigan streams, makes their damming undesirable, however, since the banks are usually low. In such situations, impounded water spreads

out into a wide and shallow pond, and usually creates high temperature danger. The shade may be destroyed by the flooding and killing of the trees or brush. Any dams which are installed, except under rare, special and approved circumstances, should be comparatively low to prevent the pond from overflowing the natural banks of the stream.

Dams may be used to good advantage in those streams, rather rare in Michigan, having banks that are steep, since the resulting ponds will be narrow and deep. In very cold streams damming may occasionally be employed to good advantage, even though a shallow wide pond is caused, but with few exceptions the larger Michigan trout streams become too warm for trout near their mouths and the warming of the headwaters can only serve to ruin the lower sections. Another objection to dams, or other barriers extending entirely across the stream, is that they, unlike the current deflectors, block the stream to boating or canoeing.

Several types of dams have been effectively used in trout streams. A simple type is the stone or boulder dam (Fig. 1). To construct this, one should lay large stones for a foundation and these should be chinked and made fairly water tight by the addition of smaller stones on the upstream side. If it is desired that the dam should be passable for trout, attention must be given to the spillway. It is usually important to the stream to insure that trout can reach their spawning grounds, which are frequently located in the small headwater streams. A dam that is not water tight, and has no spillway, the water escaping in seepage between the stones, will offer a serious obstacle to trout, because the fish cannot pass as the water does and must jump over a large



Various types of current deflectors are used effectively to make the stream improve itself. Above are shown Fig. 3—the stone wing deflector; Fig. 4—the log wing deflector; Fig. 5—the A-type and Fig. 6—the Y-type. Each style accomplishes its own purpose in a given stream situation.

pile of rocks to get above the dam. A two or possibly even three foot dam which is water tight, causing the water to spill over a narrow top, is not a serious barrier to trout.

A very simple dam for use in small streams is the log dam (Fig. 2). It is made by seating a large log firmly against the bottom, and setting the ends into the bank. One or more logs are put on top of the foundation one. Stakes are driven to hold the logs in place and gravel is used to render the structure water-tight.

Large stones may be substituted for stakes, to hold the logs in place. Unless water-logged materials are used the logs should be bound, staked on both sides and wired over the tops, to avoid the danger of the logs being lifted by high water.

Other types of dams are described in the following books: Hewitt's *Better Trout Streams* (Scribner's), and in several British books, notably Mattram's *Trout Fisheries* (Herbert Jenkins, London) and Platt's *Trout Streams* (Field Press, London). Space prevents a discussion of these, but the interested reader is referred to these books. The Hewitt dam, which has become well known, is a very clever device, and is especially valuable for streams having good banks and a bottom too hard for driving stakes. It has the disadvantages of other dams, especially where beaver are apt to increase the degree of upstream flooding.

The easiest and most effective way to improve streams is to put the current to work; to force the stream to improve itself. By careful planning, the current can be made to create and enlarge the pools to almost any degree desired, with the expectation that the sheltered pools so constructed will increase the carrying capacity of the streams for large trout. The degree of success attained in attempting the desired results, depends not merely upon the plans adopted, but also upon the manner of installing the devices which are selected.

It has been our experience that the most important means of bettering trout conditions are the various types of current deflectors, such as are shown in Figs. 3 to 6. Such constructions are especially adapted to low-banked streams which do not need or will not permit damming, if the improving of trout fishing in the stream as a whole is the chief con-

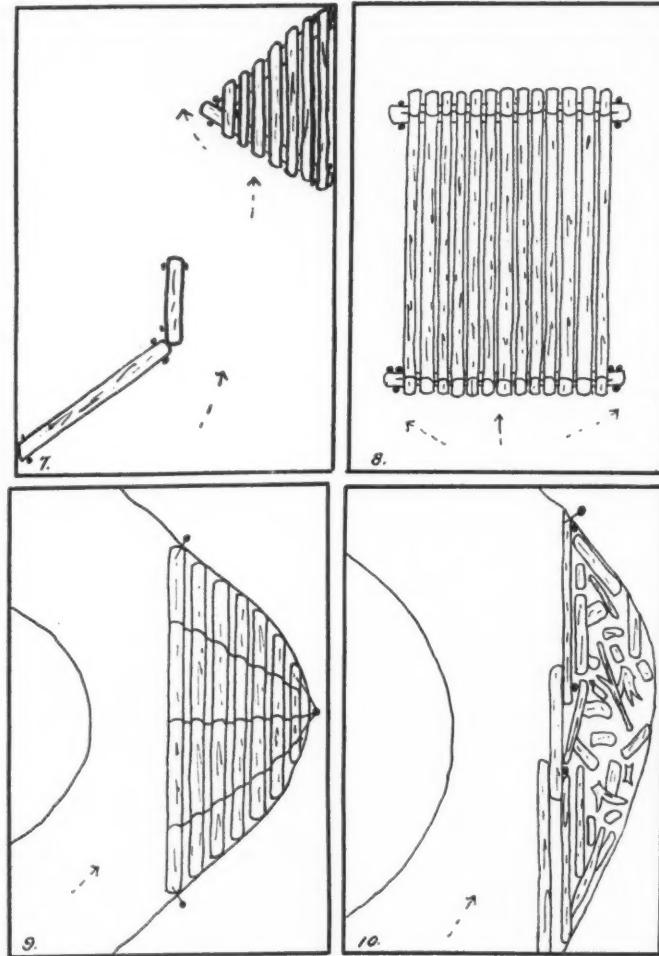
sideration. The deflector blocks only part of the width of the stream, concentrating and accelerating the current where not blocked. Where properly slanted, this type of barrier deepens the flowing water several inches by creating a partial resistance to its natural flow. The angle of installation determines the effectiveness of this device: a forty-five to sixty degree slant insures that the greater part of the water and ice slides off the end of the wing. Where the effective flow of the water is confined to a narrow channel by the deflector, a deep pool is scoured out, just as a hole is produced where a road culvert carries the entire flow of a stream. The number or size of the trout pools formed by a single wing deflector depends on the character of the stream. The current can often be so concentrated and accelerated, as to be effective in deepening the natural pools for a considerable distance downstream. The free end of the deflector usually forms an excellent holding place for trout. Hides often form also just below and beneath the wing, and at times the recesses here produced are inviting hiding places for trout. To obtain the real benefit from the deflectors, however, they should be combined with one or another type of cover, such as are described later.

The current where accelerated by a deflector often digs out a large area of sand (up to 2,000 square feet in Michigan streams less than fifty feet wide), thus exposing the original gravel bed. In this

way portions of streams

in Michigan have been made available again for spawning, and have been so utilized by the trout. Or where the bottom is of firm gravel almost cemented together, the gravel is broken up, washed and deposited below in a bar, where it is made available for spawning purposes. Furthermore, the gravel is distinctly more productive of trout food than the sand. Even more productive are the weed beds, which we have found forming on the bars in the lee of the barriers. The weed beds also provide shelter for the small trout.

The deflectors may be constructed of logs or of boulders; where neither are available, of stake- or sheet-piling, low-grade cement or of trash held against a coarse wire screen support by stakes. If made of logs (*Continuing on page 479*)



Actual cover must be often supplied in trout stream improvement, complementing the use of dams and deflectors. Above—Fig. 7 shows a combination of the triangle cover and deflector; Fig. 8 is the simple square cover; Fig. 9 is known as the raft type of cover and Fig. 10 the boom cover.



EDITORIAL

Forestry and Unemployment

PASSAGE by Congress on July 16 of the much mooted relief bill extending federal aid to unemployment should bring under fair and non-partisan consideration the merits and possibilities of forest work as a cooperative relief measure by federal and state agencies. In national emergencies like the present, men are more important than trees. Forest work programs should be approached from the standpoint of first the relief they can give to the destitute, cost considered, and second the constructive character of the work to be performed. The forty-eight states of the union embrace over 500,000,000 acres of land on which trees are growing, or should be growing, in order to maintain America's tree environment and its backlog of fertile soil, clear streams, outdoor life and labor and the raw materials for the city factories.

These acres block up a large part of the natural resources of the country. The manner in which they are cared for now and in the future affects for good or evil the permanent prosperity of the nation and conditions of employment in years to come. Anyone familiar with the state of our forest lands, their lack of adequate protection, their influence upon soil erosion, stream silting, and water conservation, knows that the application of labor to this badly depleted resource would be a worthwhile investment for the states and the nation. Almost everywhere throughout the country's forest domain there is work waiting to be done embracing the following major activities: (1) The construction of thousands of miles of fire breaks, forest roads and trails, telephone lines, etc., to better safeguard forests and forest land resources against fire; (2) Improvement cuttings to increase growth and forest values in general; (3) Planting denuded areas and establishing additional forest nurseries; (4) Control of tree destroying insects and diseases; (5) Salvaging firewood in the forest for the destitute in city and country; (6) Work to retard soil erosion and to stop the millions of tons of silt that are pouring into our streams annually; (7) Planting trees along the roadsides and the beautification of forest areas bordering the country's highways.

Here are a group of activities that could absorb idle men by the hundreds of thousands. The limiting factor is not numbers, but the financial ability of communities, States and the Federal Government to organize and maintain work crews in forest areas. Virtually every state and almost every community could put far more men to work in constructive forest activities than funds will permit. The \$2,000,000,000 federal relief bill was passed to relieve destitution and to expedite public work programs. One provision in particular

provides for federal advances to the states aggregating \$300,000,000 to be used to meet unemployment situations. If the states are so minded the measure offers them an opportunity to supplement local state relief funds with federal advances to be expended in relieving bread lines and conditions of want.

In the thirty states in which there are National Forests, there would appear to be no reason why the Federal Government could not take leadership in offering cooperative programs of relief work on the National Forests where we believe upwards of 300,000 men could, if necessary, be advantageously worked from subsistence camps. Unquestionably, the National Parks, the Indian forests and the federal wild life reservations could employ another 50,000, while the State forests and parks and the vast area of privately owned forests and watershed land throughout the country could offer worthwhile work for two or three times the number on state and federal lands.

Forest work as a means of helping to relieve state emergencies of unemployment is not a new proposal nor an untried one. Many states last winter turned to forest areas as a means of helping to meet their unemployment problems. Most notable among them was California with its twenty-eight forestry camps in forest and watershed regions of the State. These camps, operated on a subsistence basis of lodging and three well-cooked meals a day for six hours of work, absorbed 3,000 men from the city bread lines at a cost of less than fifty cents a day for each man. The whole undertaking proved so successful, so beneficial to the health and morale of the men, and so worthwhile from the standpoint of public work accomplished that Governor Rolph is planning to expand the project on a greatly enlarged scale next winter, provided funds are available.

The federal relief act would appear to open the way for governors of other states to apply the California plan to their unemployment problems. Instead of men crowding the bread lines, accepting charity, suffering mentally and physically in idleness which often leads to crime, subsistence work camps in the forests care for them in a way that reconstructs not only the bodies and minds of the men but the land in which they and their dependents must live. It is well to remember that the greatest maker of work in all the world is nature. Every living tree, every living plant is today at work trying to fulfill its destiny. For mankind that destiny is the maintenance of an environment that will provide spiritual and material values and opportunities for full living. Forest work camps recognize the partnership of nature and mankind.



"An admirable, lovable and comfortable tree, beautiful to look upon."

"Under the White Birches"

By HENRY VAN DYKE

(From "Little Rivers," Copyright, 1893, 1903, by Charles Scribner's Sons.
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Men may say what they will in praise of their houses, and grow eloquent upon the merits of various styles of architecture, but, for our part, we are agreed that there is nothing to be compared with a tent. It is the most venerable and aristocratic form of human habitation. Abraham and Sarah lived in it, and shared its hospitality with angels. It is exempt from the base tyranny of the plumber, the paper hanger, and the gas-man. It is not immovably bound to one dull spot of earth by the chains of a cellar and a system of water-pipes. It has a noble freedom of locomotion. It follows the wishes of its inhabitants, and goes with them, a traveling home, as the spirit moves them to explore the wilderness. At their pleasure, new beds of wild flowers surround it, new plantations of trees overshadow it, and new avenues of shining water lead to its ever-open door. What the tent lacks in luxury it makes up in liberty; or rather let us say that liberty itself is the greatest luxury.

Another thing is worth remembering—a family which lives in a tent never can have a skeleton in the closet.

But it must not be supposed that every spot in the woods is suitable for a camp, or that a good tenting-ground can be chosen without knowledge and forethought. One of the requisites, indeed, is to be found everywhere in the St. John's region; for all the lakes and rivers are full of clear, cool water, and the traveler does not need to search for a spring. But it is always necessary to look carefully for a bit of smooth ground on the shore, far enough above the water to be dry, and slightly sloping, so that the head of the bed may be higher than the foot. Above all, it must be free from big stones and serpentine roots of trees. A root that looks no bigger than an inch-worm in the day time assumes the proportions of a boa-constrictor at midnight—when you find it under your



"I should not feel at home in camp unless I could sit in the door of the tent and look out across flowing water."

hip-bone. There should also be plenty of evergreens near at hand for the beds. Spruce will answer at a pinch; it has an aromatic smell; but it is too stiff and humpy. Hemlock is smoother and more flexible; but the spring soon wears out of it. The balsam-fir, with its elastic branches and thick, flat needles, is the best of all. A bed of these boughs a foot deep is softer than a mattress and as fragrant as a thousand Christmas trees. Two things more are needed for the ideal camp-ground—an open situation, where the breeze will drive away the flies and mosquitoes, and an abundance of dry fire-wood

among them year after year, you will learn to know many of them personally, and an attachment will grow up between you and them individually." So writes W. C. Prime, in his book "Among the Northern Hills," and straightway launches forth into eulogy on the white birch. And truly it is an admirable, lovable, and comfortable tree, beautiful to look upon and full of various uses. Its wood is strong to make paddles and ax handles, and glorious to burn, blazing up at first with a flashing flame, and then holding the fire in its glowing heart all through the night. Its bark is the most



"The traveler does not need to search for a spring."

within easy reach. Yes, and a third thing must not be forgotten; for, says my Lady Greygown:

"I shouldn't feel at home in camp unless I could sit in the door of the tent and look out across flowing water!"

All these conditions are met in our favorite camping place below the first fall in the Grande Décharge. A rocky point juts out into the river and makes a fine landing for the canoes. There is a dismantled fishing cabin a few rods back in the woods from which we can borrow boards for table and chairs. A group of cedars on the lower edge of the point opens just wide enough to receive and shelter our tent. At a good distance beyond ours, the guides' tent is pitched; and the big camp-fire burns between the two dwellings. A pair of white birches lift their leafy crowns far above us, and after them we name the place, *Le Camp aux Bouleaux*.

"Why not call trees people?—since, if you come to live

serviceable of all the products of the wilderness. In Russia it is used in tanning, and gives its subtle, sacerdotal fragrance to Russian leather. But here, in the woods, it serves more primitive ends. It can be peeled off in a huge roll from some giant tree and fashioned into a swift canoe to carry man over the waters. It can be cut into square sheets to roof his shanty in the forest. It is the paper on which he writes his woodland dispatches, and the flexible material which he bends into drinking-cups of silver lined with gold. A thin strip of it wrapped around the end of a candle and fastened in a cleft stick makes a practicable chandelier. A basket for berries, a horn to call the lovelorn moose through the autumnal woods, a canvas on which to draw the outline of great and memorable fish—all these and many other indispensable luxuries are stored up for the skilful woodsman in the birch bark.

Only do not rob or mar the tree, unless you really need what it has to give you. Let it stand and grow in virgin majesty, ungirdled and unscarred, while the trunk becomes a firm pillar of the forest temple, and the branches spread abroad a refuge of bright green leaves for the birds of the air. Nature never made a more excellent piece of handiwork. "And if," said my Lady Greygown, "I should ever become a dryad, I would choose to be transformed into a white birch. And then, when the days of my life were numbered, and the sap had ceased to flow, and the last leaf had fallen, and the dry bark hung around me in ragged curls and streamers, some wandering hunter would come in the wintry night and touch a lighted coal to my body, and my spirit would flash up in a fiery chariot into the sky."

The chief occupation of our idle days on the Grande Décharge was fishing. Above the camp spread a noble pool, more than two miles in circumference, and diversified with smooth bays and whirling eddies, sand beaches and rocky islands. The river poured into it at the head, foaming and raging down a long *chute*, and swept out of it just in front of our camp. It was full of fish of various kinds — long-nosed pickerel, wall-eyed pike, and stupid chub. But the prince of the pool was the fighting ouananiche, the little salmon of St. John.

Here let me chant thy praise, thou noblest and most high-minded fish, the cleanest feeder, the merriest liver, the loftiest leaper, and the bravest warrior of all creatures that swim! Thy cousin, the trout, in his purple and gold with crimson spots, wears a more splendid armor than thy russet and silver mottled with black, but thine is the kinglier nature. His courage and skill compared with thine

"Are as moonlight unto sunlight, and as water unto wine."

The old salmon of the sea who begot thee, long ago, in these inland waters, became a backslider, descending again to the ocean, and grew gross and heavy with coarse feeding. But thou, unsalted salmon of the foaming floods, not land-locked, as men call thee, but choosing of thine own free-will to dwell on a loftier level, in the pure, swift current of a living stream, hast grown in grace and risen to a higher life. Thou art not to be measured by quantity, but by quality, and thy five pounds of pure vigor will outweigh a score of pounds of flesh less vitalized by spirit. Thou feedest on the flies of the air, and thy food is transformed into an aerial passion for flight, as thou springest across the pool, vaulting toward the sky. Thine eyes have grown large and keen by peering through the foam, and the feathered hook that can deceive thee must be deftly tied and delicately cast. Thy tail and fins, by ceaseless conflict with the rapids, have broadened and strengthened, so that they can flash thy slender body like a living arrow up the fall. As Lancelot among the knights, so art thou among the fish, the plain-armored hero, the sun-burnt champion of all the water-folk.

Every morning and evening, Greygown and I would go out for ouananiche, and sometimes we caught plenty and sometimes few, but we never came back without a good catch of happiness. There were certain places where the fish liked

to stay. For example, we always looked for one at the lower corner of a big rock, very close to it, where he could poise himself easily on the edge of the strong downward stream. Another likely place was a straight run of water, swift—but not too swift—with a sunken stone in the middle. The ouananiche does not like crooked, twisting water. An even current is far more comfortable, for then he discovers just how much effort is needed to balance against it, and keeps up the movement mechanically, as if he were half asleep. But his favorite place is under one of the floating islands of thick foam that gather in the corners below the falls. The matted flakes give a grateful shelter from the sun, I fancy, and almost all game-fish love to lie in the shade; but the chief reason why the ouananiche haunt the drifting white mass is because it is full of flies and gnats, beaten down by the spray of the cataract, and sprinkled all through the foam like plums in a cake. To this natural confection the little salmon, lurking in his corner, plays the part of Jack Horner all day long, and never wearies.

There are only two successful methods of angling now. The first of these I tried, and by casting delicately with a tiny brown trout-fly tied on a gossamer strand of gut, captured a pair of fish weighing about three pounds each. They fought against the spring of the four-ounce rod for nearly half an hour before Ferdinand could slip the net around them. But there was another and a broader tail still waving disdainfully on the outer edge of the foam. "And now," said the gallant Ferdinand, "the turn is to madame, that she should prove her fortune—attend but a moment, madame, while I seek the sauterelle."

This was the second method; the grasshopper was attached to the hook, and casting the line well out across the pool, Ferdinand put the rod into Greygown's hands. She stood poised upon a pinnacle of rock, like patience on a monument, waiting for a bite. It came. There was a slow, gentle pull at the line, answered by a quick jerk of the rod, and a noble fish flashed into the air. Four pounds and a half at least! He leaped again and again, shaking the drops from his silvery sides. He rushed up the rapids as if he had determined to return to the lake, and down again as if he had changed his plans and determined to go to the Saguenay. He sulked in the deep water and rubbed his nose against the rocks. He did his best to treat that treacherous grasshopper as the whale served Jonah. But Greygown, through all her little screams and shouts of excitement, was steady and sage. She never gave the fish an inch of slack line; and at last he lay glittering on the rocks, with the black St. Andrew's crosses clearly marked on his plump sides, and the iridescent spots gleaming on his small, shapely head. "*Une belle!*" cried Ferdinand, as he held up the fish in triumph, "and it is madame who has the good fortune. She understands well to take the large fish—is it not?" Greygown stepped demurely down from her pinnacle, and as we drifted down the pool in the canoe, under the mellow evening sky, her conversation betrayed not a trace of the pride that a victorious fisherman would have shown. On the contrary, she insisted that angling was an affair of chance—which was consoling, even though I knew it was not altogether true!



HIGH
JUMP

Today I saw a rainbow take
A leaping jump across a lake.
It vaulted with a hill for pole
Up and up until its whole
Bright ellipse curved, back and thigh,
To the ceiling of the sky;
Up and up until it spanned
The somber water, land to land.
I saw it start, but where it fell
Was too horizon-far to tell,
Save that a forest lifted tall
Green needled boughs to break its fall.

— Ethel Romig Fuller

THE RIGHTS OF SPORTSMEN TO USE PUBLIC LAKES AND STREAMS

By LESLIE CHILDS

EVERY outdoor sportsman whose preference runs to fishing, hunting, boating, or swimming, should have some idea of his rights, as such, upon public lakes and streams. Especially is this true in respect to fishing and fowl hunting, for here, perhaps a majority of sportsmen resort in some measure to public waters for the enjoyment of their sport. And it is a mighty easy matter for a sportsman to get into trouble, especially with adjoining land owners, unless he keeps within lawful bounds.

In the first place, generally speaking, the public has a right to fish and hunt upon public lakes and streams, so long as the fish and game laws are obeyed. And, by public lakes and streams is meant here all lakes, streams, or other bodies of water that have been surveyed, and the title to the beds thereof reserved by the state.

However, the public in its use of such water must give heed to the rights of adjoining landowners. For illustration, the public does not have the right to use the shore of public lake or stream, if the shore belongs to an adjacent land owner. And the fact that a stream or lake is navigable, or belongs to the state for other reason, will not justify a trespass by the public over the lands of another in reaching the public water.

So too, in using public streams or lakes the public must not go beyond the boundary of such waters, which is usually set at the high water mark. This for the reason that the owner of adjoining land is usually given title to the land above this mark. This point was dealt with in an interesting case that arose under the following facts:

Here a hunting club leased a tract of land in Wisconsin that abutted upon a certain small stream. The Wisconsin legislature had declared this stream navigable, and the defendants in this case sought to hunt upon the stream under the contention that the bed of the stream up to high water mark was owned by the state. The hunting club filed suit to enjoin this use, on the ground that its lease gave it the exclusive right to hunt on this ground. In upholding the right of the defendants to hunt upon the stream, the court said:

"Hunting upon navigable rivers is lawful when it is confined strictly to such waters while they are in a navigable stage, and between the boundaries of ordinary high-water marks. When so confined it is immaterial what the character of the stream or water is. It may be deep or shallow, clear or covered with aquatic vegetation."

"By ordinary high-water mark is meant the point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic. . . ."

"And where the bank or shore of any particular place is of such character that it is impossible or difficult to ascertain where the point of ordinary high-water mark is, recourse may be had to other places on the bank or shore of the same stream or lake to determine whether a given stage of water is above or below ordinary high-water mark. . . ."

So much for the general rule in measuring the territorial extent of the public's hunting and fishing right in public

streams and lakes. The point now is the right of the public to enforce its claims in cases of this kind by appeal to the courts. The attitude of the courts in situations of this kind may be illustrated by the following:

A hunting and fishing club owned a large tract of land abutting a certain bay in Michigan, and sought to prevent the public from hunting and fishing therein on the ground that the bay was private property. Certain sportsmen who were not members of the club protested that they had the right to hunt and fish in the bay within certain high-water limitations.

The club, however, held possession of the bay, and undertook to restrain others who were not members from going thereon. In this situation certain members of the public filed suit for an injunction to enjoin the club from interfering with them in their enjoyment of the water involved by hunting and fishing thereon. The club replied by contending that, even though the complaining persons had a legal right to use the bay, their remedy was by an action at law, and that the public had no right that could be enforced by injunction.

However, when, upon the trial of the case, the evidence showed that the bay was navigable and the title to the bed was held by the state of Michigan, the court held that an injunction restraining the club from interfering with the public in hunting and fishing thereon, was a proper remedy. In announcing its views the court reasoned:

"The authorities hold that certain injuries to fishing, which, if permitted, would be irreparable, or for which the law furnished no adequate remedy, may be restrained by injunction. To hunt and fish in and upon navigable waters is a public right of which any citizen may avail himself, subject to the game laws of the state. The right to hunt is as valuable to the individual as his right to fish, and the authorities which sustain and protect him in the exercise of the one may be invoked with equal force as to the other."

The foregoing cases constitute a valuable cross-section of the law on the subject under discussion. And while the holdings announced do not purport to amount to hard and fast rules that would apply in all cases, they do fairly reflect the great weight of judicial authority in reasoning upon situations of this kind.

In other words, in the absence of limiting statutes, the general rule accords the public the right to hunt, fish, boat, or swim, upon all lakes, streams and other bodies of water where the title to the beds thereof is vested in the state. This being restricted, usually, to the high-water mark from which point the abutting land owner is accorded exclusive control. So too, the mere fact that a public body or stream of water is open to the public will not justify the latter in crossing privately owned land to gain access thereto.

Needless to say, if the foregoing simple rules are kept in mind by both sportsmen and the owners of land abutting public waters, and obeyed in a friendly spirit, nine-tenths of the disputes over hunting and fishing rights on such waters would be avoided. Truly, the points brought out in the cases reviewed are well worth the having in mind by all classes of citizens, who are actuated by a spirit of fair play in the use of public lakes and streams for recreation and sport.

THROUGH THE LENS



The author in action. Note the tiny jay on the limb in the center of tree, at which he is "shooting."

Short Lessons in Photography for the Outdoorsman

FILMING FEATHERS

By ALFRED M. BAILEY and F. R. DICKINSON

Photographs by the Authors

EVERY trade has its tricks, and to this general rule photography, whether followed as a trade or a pastime, is no exception. The portrait maker, by devising the right pose, can make almost any man or woman look human; the landscape photographer, using his experience in perspective, lighting and composition, can convert a plain countryside into a realm of romance; and the specialist in close-up studies can reveal to the uninitiated amazing beauty of line and pattern in such ordinary things as the heart of a flower or the wing of a moth. In each case, however, the trick which wins success is something more than a correct choice of lenses, film emulsions, or developing formulae; for though all such mechanical aids play their parts in the final result the determining factor is

the understanding eye, guided by genuine enthusiasm for the particular type of photography in question.

In no line is this more notably true than in taking pictures of bird life, whether with still or motion cameras. Neither great technical skill with the camera nor great ornithological learning will alone produce good photographs of birds. The *sine quo non* is rather the desire to study their habits at close range, the knowledge of where and when to do it, and sufficient patience and experience to get the most out of a camera under conditions often too exasperating for printed words. You can tell a human subject how to pose and to "look more cheerful." You can take your tripod in front of a range of snow peaks and hunt about for an hour until you get the right foreground;

A naturalist and photographer of note, Mr. Bailey has wide knowledge of birds of this and other lands. In making his now most unusual collection of bird studies, he has ranged from Laysan Island, in the Hawaiian group to the far Northern islands of Alaska where he spent sixteen months among the Eskimos of the Arctic coast, gathering a wealth of invaluable photographic material. Later, as Curator of Birds and Mammals in the Colorado Museum, his work took him far afield in the Americas. In 1926, with the Field Museum Expedition to Abyssinia, he went into the Sudan and Egypt, returning to Chicago to become the Director of the Chicago Academy of Sciences. Mr. Bailey says, after years of experience in taking pictures of birds, that the determining factor for success in this work is the understanding eye, guided by a genuine interest and enthusiasm — whether the objective be the still or motion picture.



Alfred M. Bailey

and neither the human subjects nor the mountains will suddenly walk out on you. Not so with birds.

With the exception of feeding pictures, nearly all close-up work with birds must be done from a blind and during the nesting season, which runs, roughly speaking, from the end of February for the earliest nesting species, to the end of August for late broods, in the north. Only during the period of incubation and brooding, when the instinct of reproduction has full sway, does the natural caution and timidity of adult birds yield place to a boldness so mixed with fear that it is only fair to call it courage. The degree of this courage varies greatly, both with species and with individuals. The experience of the writers seems to indicate, for example, that a certain bird of prey, known as the Ferruginous rough-legged hawk, has a distinct aversion to being filmed in the privacy of its nest, for last year, in Colorado, three of these shy birds deserted and never came back after the blind was set, leaving the camera man to wait in vain,—and incidentally, in a frigid breeze. That individuals also vary in courage is often observable. No amount of tent flapping will scare one parent from its nest, while another may sit for hours, twenty feet away, sounding its alarm note with irritating regularity and persistence.

We have been making motion picture films for the Chicago Academy of Sciences' film library the past few years and we have found that one of the greatest necessities in making motion films of birds is an enthusiastic friend who has a strong back, and a willingness to tote heavy photographic outfits across woods, marshes, and over rugged hills. Before discussing equipment used, it might be well to make a short photographic trip into one of the northern marshes late in May, to see what can be found. The tules and cattails are growing rapidly, the water is warm so that we can slush without the need of heavy rubber boots, and most important of all, it is the height of the nesting season for marsh birds.



A study in expressions—interesting flash of a Goldfinch family when the mother bird is making a momentous decision.

The querulous call of the rails, the "pumping" of the bitterns, the gossiping notes of the coots, and the musical "conk-ker-ee" of the redwings come from all sides, and nests are numerous.

After half an hour's wading we have located many, but the prize is a beautiful one of the king rail. It is situated in a dense clump of growth, six inches over the water, scarcely high enough to allow for heavy rains flooding the marsh. The vegetation is tied aside, so we may have a clear view of the large speckled eggs, and a blind is set up about twelve feet away. The heavy tripod is stuck firmly in place and the camera is mounted, ready for action.

This has involved considerable exercise, and the friend with the strong back has long since proved his value. We have a box to sit on, the blind is carefully pulled in place, and we can now rest in comfort and await the homecoming of our long-legged victim. The rail can be heard scolding

from all sides as he circles through the heavy stands of cattails, and occasionally, as time slips by, we have a glimpse of his brown, waxlike feathers as he glides stealthily along. In fifteen minutes the bird may be satisfied that all is well, and we may see him standing just behind the nest; then, after eyeing the blind intently for minutes at a time, he may climb upon the nest, roll the eggs over with his beak, and settle upon them.

We have said that he *may* do this in fifteen minutes. He may, and again, it may be four hours, or longer, before pictures have been secured. We have used the pronoun *he* because it has been found that when the parents are extremely shy, the male usually approaches first.

Our rail proves amenable to reason. The whirring of the camera does not bother him, and after he is settled comfortably upon the eggs, he starts drawing the grass back into place, so eventually, he is partially concealed from the camera's eye. After we have secured more film than can possibly be used, we go away, leaving the blind in place, that we



Close-up work with birds must be done from a blind and during the nesting season, says the author. And he is borne out by this intimate and beautiful picture of a King Rail, nesting.

may return another day when the downy black chicks, with the ivory colored beaks, have made their appearance.

As we are particularly interested in motion picture work, we shall speak of bird photography from that angle. We have found that enlargements can be made from our films which are suitable for reproduction, so we rarely bother with still cameras. Portability of equipment is important, for even with the use of a motor car it is often impossible to get close to nesting sites, particularly those of marsh birds and of species which breed in mountainous or rocky regions. For all-round convenience, perhaps the spring-wind cameras using 34 mm. film in 100-foot reels are the best; though once on the ground, a standard machine with a large ground-glass focusing plate is more satisfactory, as it eliminates measuring to insure accuracy in the use of telephoto lenses. Very good results can also be had with any of the better 16 mm. cameras now on the market, if the pictures are not to be projected before large audiences. As for the blind, which must also be portable, a cloth tent, either flat on top or running up to a point, will serve the purposes, provided it has within a framework easily set up, light, and sufficiently rigid to withstand a moderate wind. At the height of the tripod it should have a diameter of at least three and one half feet; and the material used should be opaque enough to conceal the operator completely under all conditions of light. Birds soon get used to the cloth, even when thrashing about in the breeze; but any sign of life within immediately stirs their suspicion. Two or three slits, large enough to accommodate the lens and finder of the camera, may be cut on one side at suitable heights, and to keep tab on the bird while it is inspecting the blind a few small peep-holes in the other sides are handy.

Half the fascination of bird photography comes from the necessity of solving successfully the variety of problems that arise in placing the blind. As a rule, morning or evening light, with its attendant shadows, gives the most satisfactory results, and this must be kept in mind, not only in selecting the spot from which to photograph, but in clearing away any leaves, branches, or grass which might obscure the nest. For small birds, the blind might be set five or six feet away, at which distance, with a six-inch lens, the nest will nearly fill the screen. (Be careful in using the finder under such conditions, to allow for the distance, at close range, between the field of the finder and the field of the lens. Many a headless bird has appeared on the negative through failure to remember this simple point.) Due consideration should also be given to the proper height of the camera. A slight change

in the angle often makes a surprising difference in the effectiveness of the action, especially in views of the parent birds feeding the young. Using too high a tripod tends to flatten the whole image. Sometimes, of course, the photographer has little choice. In getting pictures of the snowy egret, in the coastal region of Louisiana, the writers were marooned on a scow, where the main questions were to keep the craft securely anchored and to prevent the blind from functioning as a mainsail. The nests were in high bushes growing in shallow water near the edge of a swampy pond; and the height of the camera was determined by the deck level of the scow. Again in Colorado, the golden eagle, prairie falcon, and various species of owls showed little consideration for us in the selection of their nesting sites. It was a case of climbing the nearest cliff or tree, finding a ledge or crotch big enough to stand on, measuring the distance with a tape line, and draping the blind, like a shroud, from some convenient or inconvenient projection. Under such circumstances it is well to hang the blind in place and go away for a few hours or perhaps a full day, before attempting to take pictures. By giving the bird time to get used to its new neighbor, one can avoid much tedious and uncomfortable waiting.

The use of different lenses under special conditions of light, sometimes extremely brilliant, sometimes quite obscure, calls for considerable experience in the choice of stops and the speed of the reel. Where much footage is to be taken, the danger of spoiled film can be obviated by the development each evening of a few scraps torn from the ends of exposed reels before they are sealed up. When the light permits, the use of a semi-slow motion is often effective. A speed of thirty-two frames per second will bring into visibility some of the motions of birds which are too rapid to register well at the normal rate.

For anyone who likes to be out of doors in out of the way places bird photography offers many attractions. As an on-looker, through the opening in his cloth screen, he will witness many comedies and perhaps a few tragedies among creatures whose behavior is always a source of interesting speculation. He will find plenty of vigorous exercise tempered by intervals of motionless watching and waiting. Believe it or not, he will find, if he really likes to take pictures and cares about birds, more real excitement when he presses the button than he ever found in pulling a trigger. He has an open season of twelve months instead of one or two, and he brings back a record which may have a scientific value and is certain to have an appeal for all who take an interest in what remains of our native wild life.

MINONG - - THE FLOATING ISLAND

(Continued from page 441)

ling in deep water, and often weigh as much as twenty pounds, though usually running from four to ten pounds each. Sometimes the fisherman has a busy time when he hooks a big fellow, as—with two to three hundred feet of line out, the trout takes a notion to start for the bottom—which is a long way down in Lake Superior.

Scientists estimate the abandonment of the old mining operations on Isle Royale date back a thousand years, and owing to the extremely primitive methods used it is logical to assume that mining was in progress for several centuries prior to that. But whence the race of men came or where they went is a matter of conjecture as no proven traces of their habitations, pottery, weapons, utensils, or burial places have ever been found. The method of mining used was that of fire and water—heating the rocks and then suddenly cooling them by cold water. This caused disintegration and

small particles of copper could then be secured with crude stone hammers. The miners of those days had no means of cutting mass copper and any large formations were necessarily discarded. The stone hammers were not native to the island, and were evidently brought from a long distance. Many are still to be found in the vicinity of the old mines.

It is claimed by scientists that only on Isle Royale has native or pure copper ever been found in any considerable quantity, and of a quality peculiar to itself in that it contains tiny silver globules unlike any copper found elsewhere. Yet in many Egyptian tombs opened in recent years, also in the tombs of the Aztecs in Mexico and in the mounds generally credited to that mysterious race known as the Mound Builders, scattered throughout the United States, have been found bracelets, bangles and various ornaments made of a copper identical with that of Isle (Continuing on page 479)



Conducted by
Wakelin Mc Neel

Camping in the August Woods

AUGUST is my favorite month for camping. Ponds and lagoons are then luxuriant with water plants. Beneath the lily pads, now jagged with insect injuries, can be found a great variety of insect eggs. The discarded coverings of water pupa cling to the bullrushes. Of course the birds are noticeably quiet. The purple martins leave this month and tree swallows hold conclaves on telephone wires. The red-eyed Vireo seems to be the only bird to carry on its rambling song with unabated fervor, yet the month cannot be said to be a quiet one, for the cicadas, katydids, crickets and other insects have picked up the chorus where the birds left off and fill both day and night with their calls. To enjoy an insect orchestra go camping this month and lie awake a portion of the night. Mosquitoes? Yes, but it is not likely they will play so important a lead this month. The leaves of many trees show signs of inactivity in the cells, and the colors they assume prophesy the coming Fall. Golden rods and asters decorate fields and roadsides and tell us with the eloquence of color that the best is yet to be—the harvest.

Whenever we go camping we are playing a game in which civilization has played a large part in making easy and pleasant for us. We did not make our shelter from the bark of trees or the skins of animals we caught, as the Indians did. Our shelter is a tent we bought. We did not weave our clothing,—it was purchased. We strike matches to make our fire. We did not catch, grow or find our food. We brought it with us in tin

cans. And we know where more could be secured readily in case the supply ran low. We did not make the boat we used, the balls, bats and nets used to play, or the tackle for fishing. And we came to camp by other means than the facility the Creator provided. Anyone who runs through the list of things he wants and needs at camp must realize his dependence on the products of civilization. At the close of camp I often ask for written comments about the way camp life was conducted. It is enlightening and encouraging to get the frequent reaction:

"the world was too much with us: we did not depend enough on nature for our fun and food." Such replies cause one's thoughts to revert to the races of men whose entire lives were spent in the woods and on the plains and hills where necessity was the mother of discovery. Our readers who possess a deep curiosity along this line would read with intensive interest Parker's "The Indian How Book." It will satisfy his curiosity somewhat in the matter of how they provided themselves with food, clothing and shelter "from scratch" (in boy phraseology), but he may always wonder how, in the midst of the striving, the Indian attained so high a standard of artistry in form, color and design. To one who thinks at all, such a study is a stimulation to get away from many of the artificialities of our mode of living, at least to become a producer in the place where the human race started—the garden. There the thrill of the self-accomplished task that will make the world richer by a



When we camp today, we do not have to labor with raw materials, as the Indians did, for most of our necessities in the way of food come packaged or in tins.

few bushels of potatoes develops a spirit of self-reliance that shouts defiantly, "I can, if needs be, feed myself."

How many trees do you know that were used by Indians for food or shelter? Here is a brief, selected, and rather limited list to which you may be able to add many others. Sometime later on other plants including shrubs and herbageous plants will be added to this list.

Sugar maple (*Acer saccharum*). Range—all Eastern North America. Habitat—In moist woods. Indian use—When the white man came to America he found Indians making sugar from the sap of this tree. The fact is, the Indians had developed every essential detail of the present process of producing maple syrup.

Paper or canoe birch (*Betula papyrifera*). Range—northern North America. Habitat—Scattered through the forests of other trees on rich wooded slopes, on borders of swamps and streams. Indian use—The tough bark, impervious to water, was (and is) used for canoes, baskets, water bags, cups, vessels to catch maple sap, and to cover wigwams. Shredded fine and bound in bundles it was used for torches. The inner bark was dried and powdered and used for food in famine time. The sap was used as a drink, and the wood furnished rims for snow shoes. The bark is fine tinder whether wet or dry. The wood burns while green and yields a solid bed of coals. The buds are the favorite winter and spring food for partridges. The queen of the forests, it has been called "the most bountiful provider of all trees."

American chestnut (*Castanea dentata*). Range—Maine and southern Ontario to Michigan, Georgia and Arkansas. Habitat—Rich soil. Indian use—The nuts were ground and made into a delicious and nutritious potage. We like them roasted. A blight that destroys the cambium threatens to exterminate this tree. There is no known remedy for the disease, which was imported and was not existent during Indian days. It is known as the Chestnut Blight.

Persimmon or date plums (*Diospyros Virginiana*). Range—from Connecticut to Iowa and south. Habitat—in field and woods on light well drained soil or in the rich river bottoms. Indian use—The fruit is very edible when well ripe in southern portion of its range. De Soto, the explorer of the Mis-

sissippi River, found the Indians using the fruit for food when made into loaves.

Red mulberry (*Morus rubra*). Range—Southern Vermont to South Dakota and south to Texas and Florida. Habitat—Rich soil. Indian use—Fruit very edible. This is probably the one tree that the Indian cultivated.

Basswood (*Tilia Americana*). Range—Eastern north from New Brunswick to Manitoba and south to Texas and Florida. Habitat—Scattered in hardwood forests. Indian use—The inner bark was used for cordage and matting. It was used

for binding poles in making wigwams. Dugouts and sap troughs were made from the logs. The buds are favorite deer food, and were used by Indians in emergency. The nuts of the fruit are small and abundant but they are good eating. Young shoots make wonderful whistles. The phrase "clean as a whistle" finds its origin in this wood.

White elm (*Ulmus Americana*). Range—Eastern North America as far south as Alabama and west to Texas and Manitoba. Habitat—Prefers moist soil. Indian use—The bark was used for canoes and covering for wigwams in the areas south of the range of the white birch.

Slippery elm (*Ulmus fulva*). Range—From Minnesota to eastern Texas and all states east except Florida. Habitat—Deep fertile soil on hillsides and along streams. Indian use—Inner bark used for fibre for cordage and matting. The inner bark is a wholesome food with medicinal value though it is doubtful whether the Indians had discovered this. "Oohooski" is the name given the tree by the Iroquois, meaning "it slips."



The Indians went to the trees for bark and other materials used in making baskets and utensils of all kinds—they had to find their raw materials in the forest.

If you want to play a wholesome joke on your chum get him to chew the raw meat of the Indian turnip. The root is frightfully acrid and he will soon discover the joke. The sting will linger long enough to impress the taste upon his memory and maybe to test the strength of his friendship! The Indians dried and cooked the root for food. The berries as well as the root were stewed with venison. The botanical name for this plant is *Arisaema triphyllum*, while we know it as Jack-in-the-pulpit, the Iroquois called it Baby-in-the-cradle. It grows in moist woods from Nova Scotia to Minnesota and south to the Gulf.

THE LAUREL TREE

By MAY TERESSA HOLDER

The origin of the association of laurel with glory, honor, and success is interesting.

In Greece, leaves of the laurel tree, which was a great favorite of the ancient Greeks and Romans, were made into a wreath with which victors in the Pythian games were crowned—a symbol of high honor. Following this ancient custom, it was the practice of the people of the Middle Ages

to crown their poets with beautiful flowering laurel—of which poets have long sung to us.

A Greek tradition says that the nymph Daphne, being pursued by Apollo, prayed that she be turned into a tree. Her prayer was answered and she was transformed into a laurel tree. Since then the laurel has not only been sacred to the god, but has been associated with all that stands for triumph and victory.

Forestry in Congress

By G. H. COLLINGWOOD

THE Agricultural Appropriation Bill, seven days late in making available funds for the new year, was signed by President Hoover on July 7 and hardened into law a cut of \$4,846,962 in forestry activities of the department for the current fiscal year. The act gives the Forest Service a total of \$12,383,304. This is in contrast to a total appropriation of \$17,230,266 for the past year's work. Forestry received a heavy cut in comparison with other activities as shown by the fact that Agriculture's current appropriation of \$175,408,814 is almost \$11,000,000 less than last year's appropriation.

Heaviest of all the reductions for forestry was \$1,800,000 for purchasing additional forest land in the eastern half of the country. This leaves only \$200,000 with which to maintain the staff of forest appraisers, mappers, title examiners and clerks which are necessary to carry out the work of the National Forest Reservation Commission. Their work during much of the coming year will clean up an accumulation of unfinished business, clear up titles and complete the acquisition of tracts that have been approved for purchase during the past year.

Next most severe is a cut of \$1,339,560 for improvement work on the National Forests. The reduction includes about \$1,230,000 for protection roads and trails, \$50,000 for cooperative improvements in southern California, and over \$20,000 for protection improvements such as telephone lines, cabins and lookout towers. There remains \$1,019,640.

For the first time since the passage of the Clarke-McNary Act in 1924, the Federal appropriation for cooperation with the states and private timber land owners has been set backward rather than forward. This year's appropriation of \$1,611,580 is \$163,420 less than the amount available for the past year. The reduction will be

allotted among the co-operating states, with the heaviest losses falling upon California, Michigan, Washington, Oregon, Minnesota, Florida, New York and Georgia.

The cooperative program whereby the Federal Government helps in the distribution of forest planting stock has been reduced by \$15,040. Similarly the planting program on the National Forests, which was authorized by the Knutson-Vandenberg Act a year ago suffers a set-back of \$95,800. Now only \$154,200 is available for maintaining nurseries and planting trees on the National Forests.

Every phase of forest research work under the McNary-McSweeney Act shared in the reduction of \$96,830. The survey of the nation's forest resources must curtail its program nearly \$30,000. The loss of \$27,720 for research in forest management is shared by the eleven forest experiment stations, while a similar reduction of \$27,660 was taken from the Forest Products Laboratory at Madison. The single increase was of \$43,140 for controlling white pine blister rust in the western white pine forests of northern Idaho, neighboring Wyoming and Montana. Even this is less than the amount necessary to

carry out the program presented in January, 1931, to the Bureau of the Budget. All other items of forest research and extension carried on by other bureaus in the Department of Agriculture suffered comparable reductions. The Biological Survey was cut heavily and suffered most severe reductions in appropriations for land purchases for migratory bird refuges. On June 21, the Senate authorized an appropriation of \$7,500 so that the Senate Committee on the Conservation of Wild Life Resources can complete its work.

The Legislative Economy Act, H. R. 11267, approved on June 30, authorizes the President to propose plans for reorganizing the "conservation" activities in Government, but Congress retains sixty days in which to approve or disapprove the plans.

On June 9 the House Committee on Rules approved the creation of a special committee of seven members to investigate and determine ways of bringing about economy and efficiency in Government through consolidations, abolishments and reorganizations. The Committee ordered immediate preferential status to H. Res. 282 introduced for this purpose by Representative Bulwinkle of North Carolina.

The Potomac River and its tributaries in the District of Columbia is now a game and bird sanctuary, and all hunting of wild waterfowl within the District is prohibited. This is the result of the approval of Senator Tydings' bill, S. 3792, which is similar to others introduced in the House by Representatives Palmisano and Linthicum. Increased numbers of wild fowl on the Potomac, opposite Washington, can be expected to provide an interesting sight for those who live in the city as well as for the thousands of visitors.

In response to the President's specific and urgent recommendations

to Congress in his veto message of July 11 the relief bill was redrafted and sent to the White House for approval shortly before Congress adjourned on July 16. It includes all the features of the vetoed bill which can be interpreted to the advantage of forestry and conservation work.

Chief among these is the \$300,000,000 advance to the States for the relief of distress. It is anticipated that some of this money can be used for improvement and protection work on State forests and parks, and possibly to help maintain subsistence camps in forests as has been done in California.

Highways and protection roads and trails on National Forests are given \$10,000,000 and National Parks will receive \$3,000,000 for roads and trails under Section 2 of the bill.

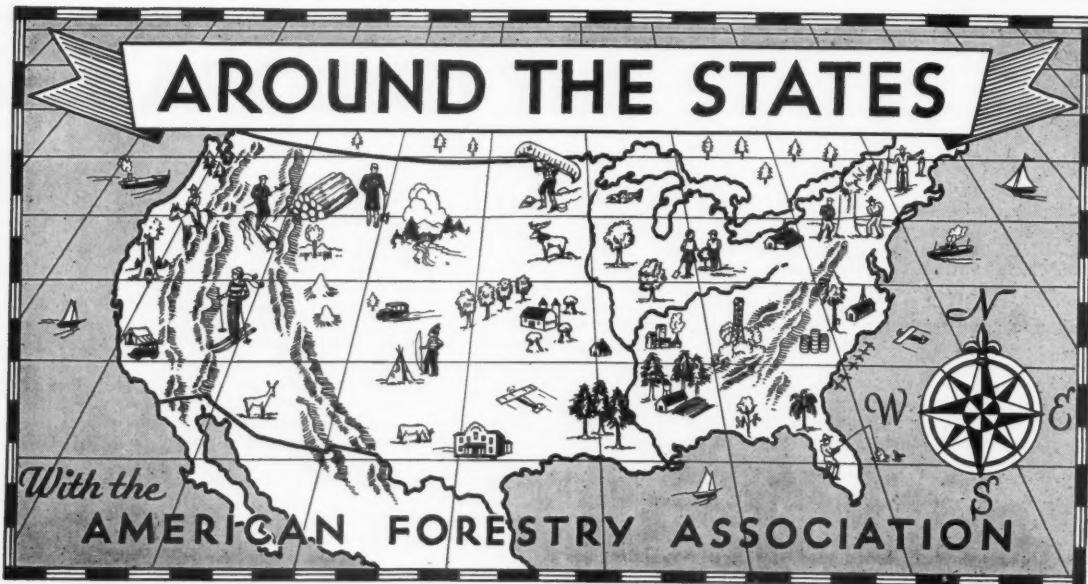
Less definite is the provision that the Reconstruction Finance Corporation may loan money "to private limited dividend corporations to aid in protection and development of forests and other renewable natural resources, which are regulated by a State or political sub-division of a State and are self-liquidating in character."

FORESTRY APPROPRIATIONS

	Amounts Authorized by Existing Acts	Amounts Actually Appropriated by Congress		1933 Decrease Below 1932
		1932	1933	
NATIONAL FORESTS				
General administration	\$370,640	\$352,580	\$18,060	
Fire prevention	2,170,720	2,159,555	11,165	
Construction of improvements	742,575	637,864	104,711	
Control of insects and diseases	352,000	393,335	41,335+	
Other items for administration	4,289,491	3,940,490	349,001	
Planting on National Forests	\$400,000	250,000	154,200	95,800
Sanitary and fire-prevention facilities on public camp grounds	67,000	67,000		
Improvements on National Forests	2,359,200	1,019,640	1,339,560	
Acquisition of additional forest land	3,000,000	2,000,000	1,800,000	
MISCELLANEOUS	1,150,340	255,630	894,710	
CLARKE-MCNARY LAW				
Forest-fire cooperation	2,500,000	1,775,000	1,611,580	163,420
Cooperative distribution forest planting stock	100,000	95,000	79,960	15,040
McNARY-MCSWEENEY LAW				
Forest management at forest experiment stations	1,000,000	562,000	534,280	27,720
Range investigations	275,000	130,000	123,030	6,970
Forest Products Laboratory	1,000,000	641,300	613,640	27,660
Forest survey	250,000	200,000	170,280	29,720
Forest economic studies	250,000	75,000	70,240	4,760
Totals		\$17,230,266	\$12,383,304	\$4,846,962

Additional Appropriations for Forestry but Administered by Other Agricultural Bureaus

	Act Authorization	Appropriated 1932	Appropriated 1933	1933 Decrease Below 1932
CLARKE-MCNARY LAW				
Forest Extension	\$100,000	\$74,000	\$69,850	\$4,150
MCNARY-MCSWEENEY LAW				
Forest diseases	250,000	125,000	120,000	5,000
Forest insects	250,000	233,590	209,790	23,800
Forest wild life	150,000	24,900	20,000	4,900
Forest fire weather	50,000	12,650	4,650	8,000
Erosion studies (cooperative) includes \$30,000 for the Forest Service		330,000	289,160	40,840



Shenandoah Forest Renamed George Washington

The Shenandoah National Forest in Virginia has been renamed the George Washington National Forest by executive order of President Hoover on July 5. The forest lies approximately one hundred miles southwest of Washington, D. C., in a region frequently traversed and partly surveyed by George Washington.

The George Washington National Forest is the largest in Virginia. It stretches for nearly one hundred miles along the summit and slopes of the Shenandoah Mountains and for a shorter distance along the Massanutton Range. Its gross area is 802,700 acres, more than half of which has already been acquired by the Government. The land now supports extensive stands of growing and mature timber. It has great value for watershed protection and recreational purposes. Numerous cities and towns draw their water supplies from its area and it constitutes an important part of the drainage area of the Shenandoah and Potomac Rivers. Lying close to Washington and other large cities, its camping and outing facilities are being developed.

This is the second National Forest to be named for a President of the United States this year. The Colorado National Forest was recently renamed the Roosevelt. Washington, like Roosevelt, was greatly interested in the land, the forests, navigation, conservation, and development, and outdoor life. Other National Forests named for Presidents are the Lincoln in New Mexico and the Cleveland in California.

Mississippi Forest Protection Tax Approved

The new law authorizing county boards of supervisors to make special assessments for forest protection has been upheld by the Attorney General of the State of Mississippi. Under the law, a petition requesting protection, signed by a majority of the free holders of the area, is sufficient to require the board of supervisors to assess an annual tax on timbered and uncultivable land, and to establish it as a forest protection area.

This law replaces an act of 1924 relative to taxation, protection and regulation which was repealed by the last legislature at the request of the Mississippi Forestry Commission.

Frederick Haynes Newell Dies

In recording the passing of Frederick Haynes Newell, one of the founders of the United States Reclamation Service and the first Secretary of The American Forestry Association, is set down the loss of a man whose influence for good in the field of public service was nation-wide. A distinguished engineer and author, Mr. Newell was always intensely interested in forest, land and water problems and early in life allied himself with the im-

portant Senator Newlands, of Nebraska, and himself. His efforts were untiring in the promotion of river and harbor improvement. In 1915 he resigned from the Government service to lecture for two years, after which he became head of the department of civil engineering of the University of Illinois, where he remained for five years, during which time he was also consulting engineer for the Reclamation Service.

Returning to Washington in 1923, Mr. Newell established a consulting practice. A Charter Member of the Cosmos Club, Mr. Newell was a member of the United States Land Commission, of the Inland Waterways Commission, and was affiliated with various power and construction boards. Always extremely active, he was the author of numerous works having to do with irrigation, irrigation engineering, water power and related subjects.

Mr. Newell is survived by his widow, two daughters and a son.

Conservation in the Democratic Platform

Brief references to conservation found in the Democratic Platform for 1932, as adopted at the convention in Chicago on June 30, include the statement that the party advocates "the removal of government from all fields of private enterprise except where necessary to develop public works and natural resources in the common interest."

Prior to this platform states, "We advocate advance planning of public works," and also "expansion of the Federal program of necessary and useful construction affected with a public interest, such as adequate flood control and waterways."

One of the leading paragraphs supports the recently enacted legislation for Federal economy by urging "an immediate and drastic reduction of governmental expenditures by abolishing useless commissions and offices, consolidating departments and bureaus, and eliminating extravagance, to accomplish a saving of not less than twenty-five per cent in the cost of Federal Government." All of which is preceded by the statement "that a party platform is a covenant with the people to be faithfully kept by the party when intrusted with power."



Frederick Haynes Newell
1862—1932

tant governmental agencies concerned with these matters.

Born in Bradford, Pennsylvania, in 1862, he was graduated as a mining engineer from Massachusetts Institute of Technology in 1885. In 1888 he became connected with the United States Geological Survey and in 1902 was made Chief of the Reclamation Service, which had been established through legislation drafted by

New York Employs 10,000 Men for Tree Planting

The New York Conservation Department planted more than 22,000,000 trees on 27,000 acres this spring, giving employment to more than 10,000 men, furnished by local unemployment relief agencies.

According to State Conservation Commissioner Henry Morgenthau, Jr., from January 1, to June 25, 1932, land acquisitions under the enlarged reforestation program have exceeded the entire quota for 1932. Such purchases for reforestation purposes were made possible by the constitutional amendment approved by the people in November, 1931.

Although the year's quota is 50,000 acres, a total of 50,253.03 acres has been placed under contract. Purchases will be continued during the remainder of the year, as long as funds are available.

Lands acquired this year are located in forty-five areas and have been purchased from 235 different owners, with 17,063.61 acres within the Forest Preserve counties but outside the Forest Preserve proper. Including purchases made in previous years, the total acreage acquired and under contract for reforestation to date is 131,597.37 acres, located in 134 areas in twenty-six counties.

Ward Shepard Selected to Study German Forestry

The Oberlaender Trust of the Carl Schurz Memorial Foundation, with headquarters in Philadelphia, has announced a grant for the study of German forestry with particular reference to its application to conditions in America. Ward Shepard, formerly of the United States Forest Service and now in Germany, has been selected to make the study and entered upon his work early in July.

The study will be conducted from an economic standpoint, giving special attention to the relation of forests to the industrial and social welfare of local communities. Consideration will be given to those features of the German forestry system that are adaptable to American conditions.

In explaining the purposes of its grant, the Oberlaender Trust states that Mr. Oberlaender, desiring to be of greater service to the American people, established the trust fund to enable Americans to discover how the German people have dealt with problems now confronting the citizens of the United States.

International Peace Park Dedicated

The Waterton-Glacier International Peace Park in Montana and Canada, the first international peace park, was dedicated June 18 as "a new step forward in international relations."

Approval of Representative Scott Leavitt's bill, H. R. 4752, on May 2, authorized President Hoover to issue a proclamation in cooperation with a similar proclamation by the Canadian Government, creating the peace park.

Joseph M. Dixon, First Assistant Secretary of the Interior, representing the Government of the United States at the exercises, read the following message from President Hoover:

"The dedication of the Waterton-Glacier International Peace Park is a further gesture of the good will that has so long blessed our relations with our Canadian neighbors, and I am gratified by the hope and the faith that it will forever be an appropriate symbol of permanent peace and friendship."

For purposes of administration, the component parts of the peace park, the Waterton Lakes Park of Canada and the Glacier National Park in the United States, each will retain its nationality and individuality, but together they will form one great international park.

Recreational Map of Pennsylvania

A new recreational map of Pennsylvania, issued by the Department of Forests and Waters, shows the location of one and one-half million acres of state forests. Primary highway systems are shown in red and secondary highway systems in black. Also marked are the locations of one hundred and twenty forest fire observation towers, nine state parks, nine state forest parks, eleven state forest monuments, and fifty state forest public camps. County lines are shown as well as the important mountain ranges, rivers, streams, lakes, and airports.

The reverse side of the map carries descriptions of the state parks, state forest parks, and monuments. The map may be obtained upon request from the Department of Forests and Waters, Harrisburg, Pennsylvania.

Advisory Board Reorganized

The reorganized advisory board for the administration of the Migratory Bird Treaty Act has been increased by the appointment of four members at large by Secretary of Agriculture Hyde. The new members are Newell B. Cook, Salt Lake City, State Game Commissioner of Utah and president of the Western Association of Fish and Game Commissioners; S. B. Locke, Chicago, Illinois, Conservation Director of the Izaak Walton League of America; Nathan Moran, San Francisco, sportsman, formerly chairman of the Game Refuge and Public Shooting Grounds Advisory Committee of California; and Sam G. Anderson, Hutchinson, Minnesota, a farmer and sportsman. At an organization meeting Judge Lee Miles, of Little Rock, Arkansas, was elected chairman.

These new appointments raise the membership of the board to nineteen. Secretary Hyde, in announcing them, said that "the Advisory Board, Migratory Bird Treaty Act, now has a broad geographic representation and also well represents the interests of sportsmen, conservationists, and agriculture."

The purpose of the board is to study and recommend policies on questions affecting the migratory waterfowl, such as length of shooting seasons, bag limits, zoning, and measures for conserving and increasing this resource.

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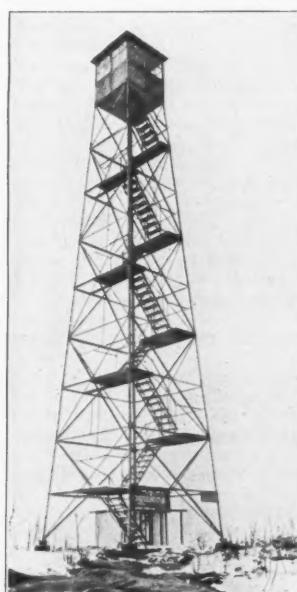
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FIRE TOWERS

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FORESTRY AS RELIEF AID TO UNEMPLOYED TAKES LIMELIGHT

Two events in the political field early in July served to call national attention to the pros and cons of a national project of forest work to help the unemployed. The first was Governor Roosevelt's citation in his Chicago address on July 2 of a reforestation and land use project as the type of public work which he favors and which he believes could give employment to a million men. "That," he declared, "is the kind of public work that is self-sustaining and therefore capable of being financed by the issuance of bonds which are made secure by the fact that the growth of tremendous crops will provide adequate security for the investment."

The second event was Secretary Hyde's statement issued to the press on July 6, branding Governor Roosevelt's proposal as "utterly visionary and chimerical." The Secretary of Agriculture not only minimized forest work but poked fun at Governor Roosevelt's "economic foresight" by declaring that a million men could plant all the seedling trees available in the country today in about three hours. The Secretary could see nothing in the emergency forest work idea except the planting of trees, which has its limitations because of lack of planting stock.

Governor Roosevelt's proposal, as made in his speech at Chicago accepting the Democratic nomination, reads as follows:

"And now one word about unemployment, and incidentally about agriculture. I have favored the use of certain types of public works, as a further emergency means of stimulating employment and the issuance of bonds, to pay for such public works, but I have pointed out that no economic end is served if we merely build without building for a necessary purpose. Such works, of course, should in so far as possible be self-sustaining, if they are to be financed by the issuing of bonds. So as to spread the points of all kinds as widely as possible, we must take definite steps to shorten the working day and the working week.

"Let us use common sense and business sense, and, just as one example, we know that a very hopeful and immediate means of relief, both for the unemployed and for agriculture, will come from a wide plan of the converting of many millions of acres of marginal and unused land into timber land through reforestation. There are tens of millions of acres east of the Mississippi River alone in abandoned farms, in cutover land, now growing up in worthless brush. Why, every European nation has a definite land policy and has had one for generations. We have not; having none, we face the future of soil erosion and timber famine. It is clear that economic foresight and immediate employment march hand in hand in the call for the reforestation of these vast areas.

"In so doing, employment can be given to a million men. That is the kind of public work that is self-sustaining—and therefore capable of being financed by the issuance of bonds which are made secure by the fact that the growth of tremendous crops will provide adequate security for the investment."

Secretary Hyde's statement issued from the Department of Agriculture was seized upon by the press of the country and widely printed. As released, his statement reads as follows:

"Governor Roosevelt has given us the specifications of one item in his 'new deal.' He will employ 'a million men' to reforest 'abandoned farms and cutover lands'—'Immediate employment and economic foresight march

hand in hand' in this program which, he says, will be 'self-sustaining.' 'The growth of tremendous crops will provide adequate security' for the issuance of bonds.

"This grand project is worthy of the 'economic foresight' of the Governor. With only a reasonable degree of efficiency, one man can plant about one acre, or something near 1,000 trees, per day. One million men, therefore, could plant about one billion trees in a day. But all the nurseries in America, whether publicly or privately owned, do not possess one billion seedling forest trees. They probably do not possess two hundred million. But suppose there were three hundred million seedling trees available, a million men could plant them in about three hours! Thus 'immediate employment and economic foresight' marching hand in hand a la Roosevelt would speedily meet an untimely end.

"Of course, the Governor may object that this statement is not fair because forestry means more than mere tree planting. So it does. Forestry is a long time job, but the Governor would have us believe that by 'economic foresight,' he has privately discovered 'immediate employment' for 'a million men' on a self-sustaining basis. The utterly visionary and chimerical character of that discovery is well demonstrated by the illustration given.

"The number of men permanently employed by the United States Forest Service is 2,800. There are 3,400 others who are employed on a six-months' basis. These 6,200 men care for 160,000,000 acres—or about one man to 25,000 acres. On that basis, a million men could care for 25 billion acres—or twelve times the entire land area of the United States.

"The forestry program of New York, of which Governor Roosevelt so enthusiastically exclaims 'I have done it, and I am doing it today' calls for reforestation of 1,000,000 acres over a period of fifteen years at a cost of \$20,000,000. It employs 72 men on a permanent basis, and enough occasional employees to equal the hours of 207 more permanent employees. Thus the Governor's enthusiastic 'Eureka' reduces itself, as a matter of permanent employment to 279 men!

"Nobody knows how many acres there are of cutover, marginal and abandoned lands which lie east of the Mississippi River. Let us suppose there are 100,000,000 acres of such lands. They would have to be purchased, titles cleared, and encumbrances paid, before a tree could be planted. From one to three years would have to elapse before seedling trees would be available. In acquiring titles to so vast an area, counties and large areas would be disorganized, taxation units destroyed, schools and roads closed. To do it on an emergency basis would throw more people out of their homes than the New York Governor could employ. The cost, on the basis of New York's program, would be around two billions of dollars. The men employed would equal, on the basis of New York's program, 27,900 permanent employees. The tremendous crop which the Governor anticipates would be from twenty-five to sixty years in maturing. In the meantime the debt would have doubled or tripled. The oversupply of forest products would have depressed the market to 'nothing flat.' This is, in Governor Roosevelt's opinion, 'self-sustaining.' This is 'adequate security' for a bond issue with a vengeance.

"I believe in forestry. It has a great economic, social, and recreational value. The

United States Department of Agriculture has been a leader in forestry for over thirty years. I believe in a national policy of land use. It holds promise of great agricultural and conservational benefits. This Department has studied and advocated such a policy for fifteen years. But they are not emergency programs which can be inflated by balloon methods. And I do not subscribe to any visionary scheme which by its sheer excesses makes both programs appear ridiculous."

Secretary Hyde's conception and appreciation of the possibility of providing work for the unemployed in the forest and land reconstruction field was subject to criticism on the part of foresters, particularly on the grounds that his statement gave the impression to the uninformed public that forest work offers only the labor of tree planting. The American Forestry Association, through its Secretary, Ovid Butler, replied to Mr. Hyde, pointing out that a very large opportunity is open in the forest field for constructive public work. Mr. Butler said:

"I have read in the morning papers your statement discounting the possibilities of providing work for the unemployed through a national project of reforestation. It is true that if reforestation is viewed in the narrow sense of merely planting trees, such a project has its limitations due to insufficiency of nursery stock. The question before the American people, however, is to provide constructive work to relieve distress among hungry men, women, and children. To give the impression that forestry offers only the possibility of tree planting is in the judgment of The American Forestry Association to dismiss the subject without fair consideration of the very large and diverse possibilities which the field offers.

"Your Department is custodian of some 150,000 acres of forest land. In addition, it cooperates with virtually every state in the Union in protecting private and state forest resources from fire. It engages in extensive protection of trees and forests against destruction from tree destroying insects and diseases. It carries on forest research in every section of the country and it is concerned with the maintenance of tree and plant cover on idle land as beneficial influences in controlling floods and stopping soil erosion, which you yourself have stated is impoverishing millions of acres of our land.

"The records of Congressional hearings offer abundant evidence that your Department yearly stresses to Congress the need of expanding these and other forestry activities in order adequately to protect basic natural resources of the nation. You are no doubt aware of the fact that the country is facing an emergency in the protection of its forest resources from fire, due to the inability of many states and private owners to provide protective funds and to the recent action of the Government in reducing cooperative funds to be made available this year. If the process of depletion in the nation's system of resource protection is permitted to continue, it will expose to wholesale loss not only our forest assets, but the complementary values inherent in stable forest land administration such as forests, wild life, soil fertility, scenic beauty, water supply, and the beneficial influences of forests upon floods and erosion.

"There appears to be no question that if a national forestry project viewed in the broad light of needed work to be done in protecting the country's forest and complementary resources from fire, insects, and diseases, in protecting agricultural lands, communities, and cities against erosion, and establishing tree and plant covers for watershed protection, in building protection roads and trails, lookout towers, telephone lines, fire lines, etc., on National and State Forests, National Parks and game pre-

serves, work for a very large number of men could be provided. Furthermore, it is work that must be done sooner or later if our natural resources are to be adequately perpetuated and the real sources of our national wealth maintained intact. The present situation, in the judgment of The American Forestry Association, offers an opportunity to accomplish this constructive end and, in so doing, to contribute very materially to relieving unemployment.

"Your attention is called to the fact that local communities and some of the states have already recognized and seized the opportunities offered by the field of forestry. During the past winter, for example, the State of California took men from the bread lines and put them to work in the forest and watershed areas of the state on fire protection improvements such as snag felling, roadside clearing, firebreak construction, insect control, etc. Some twenty-five camps were established with an average of 200 men in each camp and I am advised that the undertaking has been highly successful. I cite it merely as an apt illustration of what may be done by effective cooperation between federal, state, and local governments in giving distressed people an opportunity to do needed and constructive work. Multiply these camps in California and in every forest state in the union and relief possibilities loom large.

"I believe that what the American people, particularly those unemployed and suffering, desire and what they are entitled to, is a thorough exploration into possibilities of public welfare work available in the whole field of forestry and the opportunity to perform that work. They do not want it approached in a negative way. Your Department represents the public in this field and the country, therefore, looks to you to give it the full facts regarding the possibility of unemployment relief offered by a broad and constructive project of forest work."

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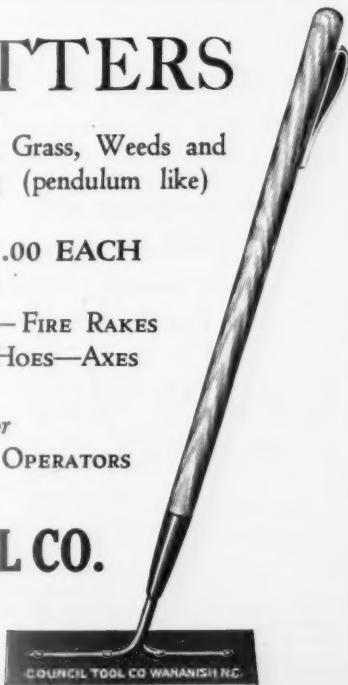
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Book Reviews



FLORIDA WILD LIFE, by Dr. Charles T. Simpson. Published by the Macmillan Company, New York. 195 pages — Illustrated. Price \$2.50.

Dr. Charles T. Simpson is conceded to be one of Florida's best known and best informed naturalists, having resided in the State for a half century, during which time he has gained a more intimate knowledge of its tropical and semi-tropical life than almost any other living man.

He has devoted many years to close study of the Everglades, its fauna and flora, and is considered an authority on this little-known, inaccessible and highly interesting region.

This book is real guide book for nature lovers, and clearly and accurately describes the varied forms of vegetable and wild life abounding in Florida.

In the last chapter of this book, Dr. Simpson describes the conditions existing in the State fifty years ago and the factors that have led up to the present very deplorable conditions. Graphically, he pictures the steps that have been taken in the devastation of the natural beauty of the State and puts his finger very definitely on the causes. He devotes some time to the draining of the Everglades and the disastrous result that followed; the land development boom that hit the State several years ago and the devastating effect it had on the State's natural scenery; the wasteful lumbering operations and destructive woods and forest fires that have followed in their wake, and closes his description with the following:

"Will the chemists, the electricians, the engineers supply our wants? Can they bring back the bounteous wild and animal life that we have wantonly destroyed? All the skill, all the science in the world cannot revive dead animal. They cannot restore a single species of plant that has been exterminated *** they are the victims of greed, of folly, of unbelievable brutishness and cruelty, of that strange desire in the heart of man to overrun, to trample out, to mercilessly destroy." —W. C. M.

FOUR HUNDRED MILLION ACRES, by Charles E. Winter. Published by the Overland Publishing Company, Casper, Wyoming. 349 pages — Illustrated. Price \$2.50.

History, court decisions, statistics and oratory are drawn upon by Judge Winter, former Wyoming Congressman, to prove that the Public Domain, and eventually much of the land now held by the Federal Government in reservations of various kinds should be turned over to the states. The four hundred million acres which serves to title the book includes in addition to the 180,000,000 acres of unreserved, unappropriated public domain studied by President Hoover's Committee on the Conservation and Administration of the Public Domain, the land in National Forests, National Parks, Indian Reservations, oil and mineral reservations, and wild life refuges. The acreage actually exceeds this figure, but probably the author would be content if that amount could be turned over to the States for them to administer with a minimum of federal restraint.

Regardless of whether one may agree with his conclusions, any one interested in the Public Domain will find himself indebted to Judge

Winter for the assemblage of statistics regarding the original distribution and ultimate disposition of the Public Domain, for the various sources of income to the Federal Government and to the several states for use and sale of the lands, for voluminous quotations from speeches of our presidents and public officers, for reference to Supreme Court decisions, and for a dramatic description of the acquisition and settlement of the West.

Were there not differences of opinion regarding the most satisfactory disposition of our public lands there would have been no need for the appointment of a special committee to spend \$50,000 to study the problem and make recommendations for its conservation and administration. The author is frankly not in sympathy with the idea that the Federal Government is primarily responsible for the preservation of our natural resources, and the restoration of those capable of being restored. He sees the individual state as the center of interest, and would place the major responsibility upon each of them. Few members of The American Forestry Association may agree with him, but they will do well to read his book.—G. H. C.

HORIZON FRAMES, by Tom Sweeney, illustrated by Bjorn Egeli. Published by Poetry Publishers, Philadelphia. Price, \$2.00.

This poet walks "close to Nature and to Nature's heart" and he brings to his work a deep and human sympathy and understanding. To the lover of nature, verse is the nearest expression of the heart's desire and the smooth beauty of Tom Sweeney's lines is completely satisfying. Whether he sings of the "ever-beating sea," the distant hills, the quiet sanctuary of the woods, human love, or some other mystic phase of the heart, his thought quiets and his song lifts and charms.—L. M. C.

INSECTS AND DISEASES OF ORNAMENTAL TREES AND SHRUBS, by E. P. Felt and W. H. Rankin. Published by the MacMillan Company, New York. 507 pages, illustrated. Price, \$5.00.

Unique among current literature on trees is this book by two eminent authorities, which combines between a single set of covers discussion of insects as well as fungus diseases of ornamental trees and shrubs. After helping to diagnose the trouble, suggestions are made for the control of the difficulty, as well as for actual repair of the damage. Suggestions are made for the treatment of wounds and cavities, while a chapter is devoted to the preparation and application of poisons for controlling insects and fungus diseases. Another chapter deals with physical injuries such as those caused by gas, smoke, electricity, etc. Frequent reference is made to the need of keeping trees vigorous, but unfortunately there is no chapter which deals specifically with tree feeding or other ways of building up weak individuals.

Frequent illustrations, classification of the injuries according to the kind of trees attacked, a complete index, coupled with a clear style largely unencumbered by technical terminology promise to make the book helpful to the average home owner.—G. H. C.

AMONG THE
CURRENT PUBLICATIONS

Field Book of Destructive Forest Insects, by State Entomologist H. B. Peirson. Published by the Maine Forest Service, Augusta, Maine. A pocket sized booklet describing more than twenty common forest insects with suggestions for their control.

Michigan Forester. Illustrated annual of the Forestry Club, University of Michigan, Ann Arbor, Michigan. A collection of short articles by Michigan foresters and a directory of graduates of the School of Forestry and Conservation.

The Idaho Forester. Illustrated annual of the School of Forestry, Moscow, Idaho. Reflections of forestry in Idaho and a directory of Idaho Forest School graduates.

Announcement of the Division of Forestry University of California Press, Berkeley, California. Description of courses in Forestry at the University of California.

Economic Utilization of Marginal Lands in Nicholas and Webster Counties, West Virginia, by Millard Peck, Bureau of Agricultural Economics; Bernard Frank, United States Forest Service; and Paul A. Eke, College of Agriculture, West Virginia University. Published by the United States Department of Agriculture in cooperation with the Agricultural Experiment Station of West Virginia.—An economic study of the resources of two mountain counties.

Treatment of Babul (Acacia Arabica) in Berar, by S. A. Vahid, Indian Forest Records, Government of India, Calcutta.—Description of silviculture as applied to the Babul Forests in the hilly country of central India.

The Annual Cruise. The Forest Club—Annual of the Oregon State College, Corvallis, Oregon.—An attractive presentation of the work, fun and ambitions of the forestry students at Oregon State College.

Proceedings of the National Conference on Land Utilization—For sale by the Superintendent of Documents, Washington, D. C.—Contains copies of all papers submitted to the National Conference on Land Utilization held in Chicago, November 19-21, 1931, at the call of the Secretary of Agriculture and the Executive Committee of the Association of Land-Grant Colleges and Universities. Also includes the recommendations.

Ontario Game and Fisheries Laws for 1932. Issued by order of the Minister of Mines, Toronto, Canada. Contains all laws pertaining to hunting and fishing in Ontario.

Light Intensity in Relation to Plant Growth in a Virgin Norway Pine Forest. By Hardy L. Shirley. Reprinted from *Journal of Agricultural Research*, Department of Agriculture, Washington, D. C. Discusses light intensity on the basis of studies made on the Chippewa National Forest, in north-central Minnesota.

Bartonia. Proceedings of the Philadelphia Botanical Club, Academy of Natural Sciences, Logan Square, Philadelphia. Contains records of botanical observations throughout the eastern half of the United States, with a picture of a stump of bald cypress discovered forty feet below the surface of the Delaware River in Philadelphia, probably a remnant of the Pleistocene Age.

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Michigan Tax Upheld on State-Owned Lands

Constitutionality of the State law providing for a local tax of ten cents an acre on all lands under the control of the State Conservation Department, except homestead lands, has been upheld in a suit against George Hogarth, State Conservation Director, and O. B. Fuller, Auditor General, in which the plaintiffs sought to restrain the State from paying the tax. The suit was instituted by Lloyd Perry, president of the Grand Rapids Chapter of the Izaak Walton League.

The levy is paid to the counties out of the Conservation Department's game protection fund under a statute passed by the 1931 legislature. The amount now due the counties is \$84,000, according to Director Hogarth. The plaintiff's brief contended that the State could not tax itself. The case is to be appealed to the State Supreme Court, according to the attorney for the plaintiff.

Warns Against Misdirected Return to Land

Relatively few good farms remain for rent, according to a recent report of the National Land-Use Planning Committee and the National Advisory and Legislative Committee on Land Use which met at the Department of Agriculture in Washington during the second week of June. The possibility of creating new farms on undeveloped land is not so bright as many people have been led to believe, and the establishment of colonies on undeveloped land has not been generally successful in the past. These all involve large outlays of capital and uncommonly skillful management.

Recognizing unemployment as an acute emergency problem, the land-use committees sought remedies that would help the unemployed without at the same time seriously aggravating the problems of agriculture. To this end, it urged cooperation between the state committees and the Federal Government as would be authorized in Senate Joint Resolution 169, introduced by Senator McNary.

The committee report warns that the back-to-the-land movement be discouraged from any tendency to increase the existing maladjustments in the use of land. It points to the danger of increasing the commercial production of easily grown crops.

Sportsmen Cooperate With Game Breeders

At the recent meeting of the Izaak Walton League of America action was taken to effect cooperation between the sportsmen of the organization and the game breeders of the country to secure the passage of legislation which will permit game breeders to legitimately raise and distribute birds for the restoration of depleted areas. In pursuance of this plan the Izaak Walton League Convention passed the following resolution:

"WHEREAS, in many states of this Union those engaged in the occupation of producing game are hedged in and harassed by antiquated laws enacted before the artificial rearing of game became an important industry; and

"WHEREAS, the men engaged in this laudable undertaking are ineffective, because of lack of numbers, in having any effect on appropriate legislation;

BE IT THEREFORE RESOLVED, That the Izaak Walton League of America cooperate with the game breeders in the various states in obtaining the passage of such legislation as will enable the breeders to legitimately raise birds and distribute such birds in furtherance of the expressed sentiment of the Izaak Walton League of America in aiding the restoration of birds in depleted areas."

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HOUSE COMMITTEE ENDORSES COLTON GRAZING BILL

Defeat of the Nye-Evans bill to grant 180,000 acres of public domain to eleven western states was signalized on June 27, when the House Committee on Public Lands reported for passage House Bill 11816, introduced by Representative Don P. Colton on May 3rd. The action of the House Committee is interpreted as representing the committee's view of the legislative principles which should govern settlement of the long standing public domain legislation. The Colton bill is based on the principle that the public lands should be retained by the Federal Government and protected from misuse and dissipation as promptly as possible. The Nye-Evans bill, on the other hand, was based on the principle of the Federal Government passing its obligations of stewardship to the several western states provided the states would accept the run-down lands.

Although recommended by President Hoover's Public Domain Commission and supported by the administration, the Nye-Evans bill from the date of its introduction met with a heavy fire of opposition from conservation-minded organizations and individuals throughout the country. It was objected to primarily on the grounds of its wide powers of disposing of public property, its lack of guaranteeing protection and conservation of the resources given away, and the authority placed in the hands of local state boards to dismember the National Forests. After running the gauntlet of these attacks for several months it became clear that passage of the bill in this session of Congress, at least, was blocked. Throughout the hearings, however, members of the House Public Lands Committee stressed the need of the Federal Government redeeming its obligations as the owner of the land by providing a system of administration that would protect it against present over-grazing and erosion. As a result of a series of conferences with this purpose in mind, between Representative Colton—former chairman of the committee—the Forest Service, and the Department of the Interior, the Colton bill was drawn and agreed to by the two Departments and the administration. It was introduced in the House by Mr. Colton on May 3rd.

Briefly, the Colton bill provides for the creation of grazing ranges on the public domain with the Secretary of the Interior responsible for the making of rules and regulations of use and their enforcement. Administration of the grazing use of the lands would be patterned after the system which has been in effect on the National Forests for the past twenty-five years and has demonstrated its success in protecting and improving the forests, forage, and other natural resources. The bill authorizes the Secretary of the Interior to issue permits and charge grazing fees for livestock grazed on the public domain ranges. Permits shall not be for periods in excess of ten years. The

Secretary can grant free grazing for settlers and residents for domestic purposes.

Homestead laws making possible the entry of suitable areas up to 160 acres for agricultural purposes would continue, but stockmen would be protected against the usurpation through these laws of their established watering places. Land exchanges which will be mutually beneficial to all concerned are provided as between the Federal Government and the States, railroads and private owners. Local associations of stockmen and their supervisory boards are to be recognized for cooperation and advice.

All moneys from grazing fees, etc., are to be deposited in the Federal Treasury with instructions that fifteen per cent shall be used for the improvement of the range, and thirty-five per cent shall be paid to the states and used for public schools and public roads of the county or counties in which the grazing district is located. In the case of grazing districts located on Indian lands which have been ceded to the United States, but which have not been disposed of under the public land laws, all of the gross receipts, with the exception of fifteen per cent for range improvements, shall be deposited to the credit of the Indians.

Administration of grazing areas so mingled with forest areas as to make their regulation by the same agency advisable may be conducted under a cooperative agreement between the two Bureaus. Such cooperation by the Forest Service has been assured in a letter to the Chairman of the Public Lands Committee from Chief Forester R. Y. Stuart, and published in the public hearing on H. R. 11816 for May 3 to June 2, 1932.

Although the House Committee has recommended the Colton bill there was little chance for it to receive consideration by the House before adjournment. The bill, however, will have a favorable position for early consideration when Congress reconvenes in December next. There is no assurance, it is pointed out, that the Nye-Evans bill may not also be revived by its partisans when Congress meets next winter, but the widespread sentiment against it is believed to make possibility of its eventual passage extremely remote. In commenting on the Colton bill, Ovid Butler, Secretary of The American Forestry Association, said:

"The Colton bill is a constructive measure. It incorporates many of the principles for which The American Forestry Association has stood and fought. Among these is provision for placing the public domain under immediate administration and thereby stopping overgrazing. If, out of the controversy over the Public Domain which has taken place the past winter, the Colton bill emerges as law, a constructive service will have been rendered the nation."

TIDAL WAVE LOCK NOW PROTECTS WILD LIFE OF CURRITUCK SOUND

Sportsmen of the country and especially hunters of migratory birds viewed with satisfaction the recent completion of the tidal wave lock of the Albemarle and Chesapeake canal at Great Bridge which was formally opened with ap-

propriate ceremony Thursday, June 16. The completion of the lock culminated a twelve-year agitation on the part of sportsmen from all sections of the country for its installation with legislators of Virginia and North Carolina and

members of Congress taking an active part. The 600-foot structure—one of the largest of its kind in the country, represents a million dollar investment, but the actual cost, under governmental supervision, amounted to approximately \$500,000.

The agitation for the lock dates back to 1920 when hunters of migratory birds and fishermen in the Currituck Sound region of North Carolina and the Back and North Bay area of Virginia started to complain of existing conditions and requested a thorough investigation into the decrease of migratory birds visiting the section and the scarcity of fish life, both of which, previously had been in abundance. The cause was traced to the deadening effect of salt water entering the region following the removal of the lock of the Albemarle and Chesapeake Canal which was purchased by the government in compliance with government orders in 1912.

Prior to the influx of salt water the region locally and nationally was famous as a resting and feeding ground for migratory birds and an ideal haven for black bass. Multitudes of all migratory birds came early and, feeding on luxuriant and succulent grasses, remained late. The region was also the most extensive and famous fishing ground for black bass on the continent.

The Albemarle and Chesapeake Canal was built prior to the Civil War to connect the waters of Chesapeake Bay at Norfolk with the waters of Upper Currituck Sound. Chesapeake Bay is influenced by the tides while Currituck Sound, a connecting waterway, is tideless, and for the purpose of equalizing these differences in water levels in the interest of navigation, a tidal guard lock was built at Great Bridge. The canal was on the line of development of an intracoastal waterway and about 1912 the government acquired the canal with provisions for the installation of an enlarged tidal guard lock if it was deemed necessary. Later government engineers reported that the lock was not necessary in the interest of navigation. In the improvement and enlargement of the canal the new lock, which was authorized, was not installed in the belief that the difference in water levels would be so distributed through the length of the canal that the currents would not seriously interfere with navigation. Apparently, the effects of the unchecked flow of the salt water into the adjacent fresh waters was not given consideration. Years of agitation followed and at various hearings testimony was brought forward to prove that the waters of Currituck Sound and Back and North Bay were being polluted.

The ceremony attending the opening of the lock was arranged by three organizations of sportsmen who have been active in the movement for the restoration of the lock for many years. They included the Back Bay Game Preservation Association, the Norfolk Chapter of the Izaak Walton League and the Cavalier Gun Club. Many visiting dignitaries were present including Frank M. Mondell, former Republican floor leader in the House of Representatives, who was an ardent supporter of the bill to install the lock; Paul G. Redington, chief of the Bureau of Biological Survey, Department of Agriculture; Dr. M. D'Arcy Magee, vice president of the Izaak Walton League of America; Homer Mains, of Washington, representing the Izaak Walton League of that city and an ardent sportsman. Those assisting in the arrangements included Francis E. Turin, director of the Advertising Board, Norfolk-Portsmouth Chamber of Commerce; A. B. Schwarzkopf, president of the same organization; W. S. Harney, manager of the chamber; Major G. R. Young, United States District Engineer, who supervised the installation of the lock, and Fairfield H. Hodges, chairman of the Convention Bureau, Norfolk-Portsmouth Chamber of Commerce.

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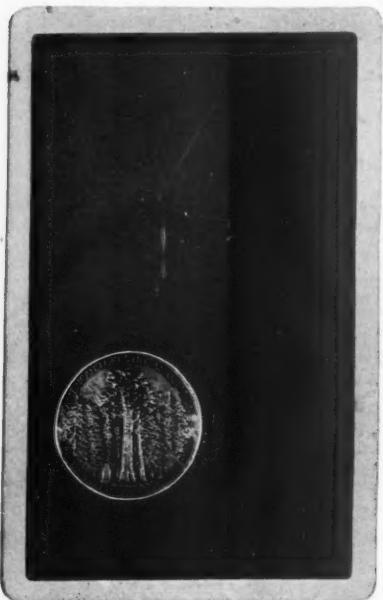
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LAND UTILIZATION AND THE UNEMPLOYED IN HOLLAND

(Continued from page 448)

of the legislation—a per capita expenditure of 12½ cents for afforestation alone. The communes also have the opportunity to obtain the technical supervision of the state over their forest properties upon payment of a moderate sum.

In respect to the reclamation of waste lands for agriculture the state grants loans to the communes at low interest for periods up to thirty years, and the communes on the same terms loan the funds to the farmers and hold a mortgage on the reclaimed land as security. The initial work of reclamation and preparing the soil for crops is done by the communes or great cooperatives such as the Dutch Heath Society, and then the land is sold in small tracts to the prospective farmers.

Most of the projects are on a sufficiently large scale to necessitate the maintenance of the workers in barracks. These are well built and kept spotlessly clean and attractive; the food served is wholesome and plentiful. Preference is given to the unemployed with dependents. The average wage scale on a number of projects inspected was about the equivalent of \$1.50 a day, with a charge of approximately fifty cents for board and lodging. The men are permitted to visit their homes over the week-ends. While modern machinery is available and is used, the use of hand tools is stressed to give employment to larger numbers.

It should be noted that the projects are of a self-liquidating nature and while they are state-aided the political sub-divisions are responsible for the administration and liquidation of the loans. The whole enterprise, it will seem, serves the dual purpose of affording relief for the unemployed and at the same time builds the foundation for a permanent livelihood on the land for the increasing population. In the case of forest plantations the objective is to check drifting sands, to produce timber to meet a deficiency in the home supply, and to provide recreation areas for all the people.

It must not be supposed that this great enterprise in land planning and utilization is wholly the work of a paternal government or an experiment in communism. The signal exception is the construction of the great dam of eighteen miles in length enclosing the Zuider Zee, and making possible the reclamation of 250,000 acres of land. This is obviously a state work because of its great cost and national service. The Dutch cling tenaciously to their philosophy of government that ensures the freedom of the individual and the exercise of his initiative. The state exists for his welfare but he largely helps himself. Nevertheless, the Dutch recognize the necessity and value of cooperative effort and cooperation is developed in great degree. This cooperation and the fixation of community and individual responsibility are the keynotes of the successful expansion of the forestry and agricultural enterprise and these principles are reflected in enabling legislation, in the development of policies and the execution of the work.

The development of the Dutch land policy is modern and designed to meet the conditions of a new era. Pressure of increasing population aggravated by the so-called occupational obsolescence of labor in industrial centers is forcing resort to the land in an effort to stabilize the national economy. The great enterprise now under way is suggestive, in measure, of problems encountered at home. In any case the Dutch effort is an inspiring example of the initiative of the state, the cooperation of the minor political units, and the responsibility of the individual.

McCaleb Retired by Pennsylvania Railroad

W. B. McCaleb of St. Davids, Pennsylvania, a Director of The American Forestry Association, retired on May 28th from the position as head of the water companies of the Pennsylvania Railroad, which he had held since 1917. Mr. McCaleb has been associated with the Pennsylvania Railroad since he graduated from the Mt. Pleasant Institute. He was born in Mt. Pleasant, West County, Pennsylvania, May 18, 1862, and has been actively interested in the engineering and water problems of the railroad more than fifty years.

Michigan State College Honors Pioneer Forester

The late Dr. William James Beal, for forty-six years Professor of Botany and Forestry at Michigan State College, was honored on June 11, 1932, by dedicating to his memory a bronze tablet bearing a bas relief portrait set in a field stone boulder within the white pine plantation which he planted in the spring of 1896.

Among those present at the dedication were Mrs. Ray Stannard Baker, daughter of Dr. Beal; Charles R. Garfield, for many years President of the Michigan Forestry Association, and members of the forestry class of 1911 who sponsored the idea. These included Frederick G. Wilson, Chief Forest Fire Warden for the Wisconsin State Department of Conservation; Harry Lee Baker, State Forester of Florida; H. Basil Wales, assistant forester in charge of Region 9; James H. McCutcheon, Clifford W. McKibbin, William I. Miller and Zelin Goodell.

The trees in the plantation are now thirty-six years old, with an average height of sixty feet and diameter at breast height of ten inches. The annual growth has been 1¼ cords an acre a year. During the past six years, while the trees were increasing one inch in diameter, a third of the present volume of forty-three cords an acre was laid on.



Dr. William James Beal

Los Angeles County Adds Forestry Equipment

Spence D. Turner, Los Angeles County Forester, reports the addition of a fifty-foot lookout tower and a permanent patrol station to aid fire control in a highly hazardous mountain area where there are many summer homes and valuable properties.

The all-steel tower is located on Bodie Peak at an elevation of 2,450 feet, and permits a view of an area approximately fifty miles in radius at the west end of the Santa Monica Mountains and in Ventura County. The new Lechusa Patrol Station includes a residence, three-car garage and facilities for the care of pack stock. It is situated so that the man on duty can also serve as lookout.

The Los Angeles County Forestry Department now has twenty permanent and four temporary patrol stations. In addition there are fourteen lookout towers in Los Angeles County—one constructed by Los Angeles City, five under control of the County Fire Warden, and eight within the Angeles National Forest.

"FLORIDA'S FIERY ORDEAL"

Dr. T. Gilbert Pearson, President of the National Association of Audubon Societies says fire hazard has reached alarming proportions and is a perpetual menace to the flora and fauna of the State.

The American Forestry Association's condemnation of the failure of the State of Florida to control forest fires, as presented in the June issue of AMERICAN FORESTS, has brought widespread support and approval from many people throughout the country who know Florida well and who appreciate the value of its wonderful natural resources to the state and to the nation. These comments without exception are written in a spirit not of destructive criticism but of hope that the people of Florida will put their fiery house in order for the welfare of the state and of those from other sections of the country who want to see its natural assets perpetuated. The Editor of AMERICAN FORESTS is glad to print below one of these comments, coming from Dr. T. Gilbert Pearson, President of the National Association of Audubon Societies.

"I have read with sympathetic interest the three articles in the June issue of AMERICAN FORESTS, which graphically portray the vast damage annually wrought in Florida by fire. The details of these articles bring vividly to mind memories of my boyhood days in Florida, when, with my father and brother, we joined forces with all our neighbors in frantically trying to stop the mad onrush of many a raging forest fire, for it was the custom of cattle raisers to burn the pinelands each winter to get fresh grass for their stock.

"In those days, I believe, we took this 'fiery ordeal' with calm recognition, as a sort of necessary evil to be endured. Little progress has been made during the intervening years in correcting this general attitude of apathy and resignation to a condition which obviously could be vastly improved.

"Since leaving the Florida of my youth, I have returned on numerous occasions and have traveled many thousands of miles over the State. Often I have been made sick at heart as I have witnessed the widespread devastation wrought almost everywhere by fire.

"A representative of our Association not long ago having returned from a journey across the State from North to South, reported that in his opinion 90% of all the pine-woods

country recently had been burned over. Such a condition is not only a perpetual menace to the wonderful flora and fauna of Florida, but is also a constant threat to the well-being and self-respect of its citizenry.

"There is one aspect of this troublesome problem which to me is of special concern. I refer to the proposed Everglade National Park, where due to drainage and the permanent lowering of water-levels, the fire hazard has become of alarming proportions. As you doubtless know I have been active from the first in the furtherance of the movement to create this Park, and the National Association of Audubon Societies has thrown its influence in favor of the bill now before Congress.

"Regardless of how the citizens of Florida may feel about the annual burning of the swamps and forests of their State, the people of other sections of the country do not like it. Not long ago one of my friends said: 'On a recent trip to Florida I was so disgusted with the calm indifference of the people in controlling forest-fires that I never expect to go to the State again to see its burnt over hammocks, its scorched pine trees and its blackened savannahs.'

"In our efforts to advance the Everglades Park bill it would be a help if assurance could be given to Congress and the people of the country generally, that Florida had seriously set its hand at the task of correcting the attitude of its citizens in the matter of starting fires in the forests and glades. The State Forester and other wide-awake citizens in Florida are working heroically to correct this evil, but they need the help of many others.

"I have been extremely appreciative of the time and expenditure of funds which the American Forestry Association has been giving to try to arouse Florida to the terrific economic losses sustained by permitting the annual burning of its forests, and my best wishes at all times shall go with you as you shall continue to work in the furtherance of this worthy cause."

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Conservation Calendar in Congress

Published monthly while Congress is in session as a service to the members of The American Forestry Association. This calendar contains bills introduced between June 5 and July 12, and those introduced prior to those dates upon which any action has been taken. All bills on which the status remains unchanged will be found in AMERICAN FORESTS for January, February, March, April, May, June and July.

BILLS PASSED

H. R. 7912—BUCHANAN—Department of Agriculture Appropriation Bill for 1933. Approved July 7. Public Law No. 269.

H. R. 11267—SANDLIN—Legislative Appropriation Bill for 1933, with omnibus economy bill as an amendment. Approved June 30. Public Law No. 212.

H. R. 12443—BYRNS—Second Deficiency Appropriation Bill for fiscal years ending June 30, 1932, and June 30, 1933. Approved July 1. Public Law No. 235.

S. 3784—BORAH—Adding certain lands to the Idaho National Forest, Idaho. Approved June 30. Public Law No. 230.

H. R. 8548—HAWLEY—Authorizing the adjustment of the boundaries of the Siuslaw National Forest, Oregon. Approved June 30. Public Law No. 226.

H. R. 11944—JONES—To facilitate execution of and economy in field season contracts of the Forest Service. Approved June 30. Public Law No. 229.

S. Res. 203—WALCOTT—Resolved, That the special committee directed by Senate Resolution Numbered 246, agreed to April 17, 1930, to investigate appropriate methods for the replacement and conservation of wild-animal life hereby is authorized to expend in furtherance of such purposes \$7,500 in addition to the amount heretofore authorized. Agreed to by Senate June 21.

H. R. 7501—To prevent, in the Canal Zone, fire-hunting at night and hunting by means of a spring or trap. Approved July 5. Public Law No. 250.

H. R. 7505—LEA—To provide for the protection of birds and their nests in the Canal Zone. Approved July 5. Public Law No. 253.

S. 4874—GLENN—Granting a right of way or easement over lands of the United States within the Upper Mississippi River Wild Life and Fish Refuge to the Savanna-Sabula Bridge Company for the construction, maintenance, and operation of a highway between Savanna, Illinois, and Sabula, Iowa. Approved July 6. Public Law No. 265.

FORESTS

S. 4497—BORAH—Adding certain lands to the Boise National Forest, Idaho. Reported to Senate June 13. Report No. 809. Passed Senate June 27. H. R. 413—FRENCH. Reported to House June 8. Report No. 1558.

S. 1492—JONES—Adding certain lands to the Columbia National Forest in the State of Washington. To Committee on Agriculture and Forestry December 10. Reported to Senate June 3. Report No. 764. Passed Senate June 24. H. R. 5477—JOHNSON.

H. R. 12126—TAYLOR—Adding certain lands to the Gunnison National Forest, Colorado. To Committee on Public Lands May 17. Reported to House June 13. Report No. 1617.

S. 763—Extending the provisions of the Forest Exchange Act to lands adjacent to the National Forests in the State of Oregon. To

Committee on Agriculture and Forestry December 9. Reported to Senate May 31. Report No. 755. Passed Senate June 8. H. R. 773—MCNARY—To facilitate the use and occupancy of national forest lands for purposes of residence, recreation, education, industry, and commerce. To Committee on Agriculture and Forestry December 9. Reported to Senate May 31. Report No. 754. Passed Senate June 8.

H. R. 12876—COLTON—Granting the right to cut timber in national forest for the construction of a railroad from Craig, Colorado, to Salt Lake City, Utah. To Committee on Public Lands, June 30.

PARKS

H. R. 12601—WEAVER—To provide for the completion of the purchase of lands for the Great Smoky Mountain National Park and for its development. To Committee on Banking and Currency, June 11.

H. R. 12771—WEAVER—Authorizing the Reconstruction Finance Corporation to lend to the States of North Carolina and Tennessee certain funds for the completion of the Great Smoky Mountains National Park. To Committee on Banking and Currency, June 22.

S. 4522—MCKELLAR—Authorizing the conveyance to the State of Tennessee of certain land deeded to the United States for the Great Smoky Mountains National Park and not needed therefor. To Committee on Public Lands and Surveys, April 28. Reported to Senate, June 13. Report No. 810. Passed Senate June 27. Reported to House July 1. Report No. 1742. H. R. 12204—TAYLOR.

S. 4374—BINGHAM—Empowering the superintendent of the Hawaii National Park to perform functions now performed by United States commissioner for said national park. To Committee on Agriculture and Forestry April 12. Reported to Senate May 12. Report No. 684. Passed Senate June 8.

H. R. 11895—TIMBERLAKE—Authorizing the President, in his discretion, to make adjustments in the eastern boundary line of Rocky Mountain National Park in vicinity of Estes Park, Colorado. To Committee on Public Lands May 5. Reported to House May 19. Report No. 1388. Recommitted June 16.

S. Res. 255—BROOKHART—Authorizing an investigation by the Public Lands Committee on the activities of the United States National Park Service in the Department of the Interior. Ordered to lie on the table June 27.

H. R. 12941—LUCE—Creating a national park trust fund board. To Committee on Public Lands, July 11.

PUBLIC DOMAIN

H. R. 11816—COLTON—To stop injury to the public grazing lands by preventing overgrazing and soil deterioration, to provide for their orderly use, improvement and development, to stabilize the livestock industry dependent

upon the public range, and for other purposes. To Committee on Public Lands May 3. Reported to the House June 27. Report No. 1719. Hearings on this bill, which were held May 3, 19, 24, 31 and June 1 and 2, have now been published.

Hearings on H. R. 5840, granting remaining unreserved public lands to the states, which were held February 13 and 23; March 17, 18, 19, 21, 22, 23, 29; and April 5 and 19, have now been published.

ROADS

S. 36—ODDIE—Providing Federal aid in construction of roads, including an appropriation for forest roads and trails. To Committee on Post Offices and Post Roads December 9. Reported to Senate May 19. Report No. 719. Passed Senate June 8. Reported to House June 11. Report No. 1609. H. R. 12286—ALMON.

WATER

H. R. 12700—SUTPHIN—Prohibiting the deposit of refuse in navigable waters. To Committee on Rivers and Harbors June 17.

S. 4443—JOHNSON—Providing emergency relief of Palo Verde Valley, California. To Committee on Commerce April 21. Reported to Senate April 28. Report No. 614. Passed Senate June 1. Reported to House June 18. Report No. 1656. House bill laid on table July 1.

WILD LIFE

S. 3792—TYDINGS—Providing for the establishment of a bird and game sanctuary of the Potomac River. To Committee on District of Columbia February 24. Reported to Senate May 10. Report No. 672. Passed Senate June 8. Passed House July 11.

H. R. 12602—MCCORMACK—To secure the increase of migratory wild fowl and other game, to provide revenue for accomplishing the purpose of this act, and for other purposes. To Committee on Ways and Means June 11.

S. 1863—MCNARY—Authorizing and directing the transfer of Widow's Island, Maine, by the Secretary of the Navy to the Secretary of Agriculture for administration as a migratory-bird refuge. To Committee on Agriculture and Forestry December 15. Reported to Senate June 23. Report No. 897. Passed Senate June 27. H. R. 5642—HAUGEN. Report No. 1307.

Hearings before the Special Committee on Conservation of Wild Life Resources United States Senate on the Protection and Preservation of Migratory Waterfowl in the United States, which were held on April 4, 5, and 6, have been published.

MISCELLANEOUS

H. R. 12445—RAINEY—To broaden the lending powers of the Reconstruction Finance Corporation, and to create employment by authorizing and expediting a public works program. Known as the Garner Emergency Relief Bill. To Committee on Ways and Means June 3. Reported to House June 6. Report No. 1512. Passed House June 7. Reported to Senate, amended, June 15. Report No. 831. Passed Senate, amended, June 23. Sent to Conference June 24. Vetoed July 11. Referred to Ways and Means, July 11. S. 4755—WAGNER. Report to Senate June 8. Report No. 795.

H. R. 9642—WAGNER—Emergency Relief Bill. To Committee on Roads, February 25. Passed House February 27. Passed Senate July 12, with amendments.

H. R. 12280—REILLY—To create Federal Home Loan Banks. To Committee on Banking and Currency June 16. Reported to House May 25. Report No. 1418. Passed House June 15. Reported to Senate with amendments June

20. H. Res. 253 and S. 2959—WATSON. S. J. Res. 169—MCNARY—Providing information as an aid to unemployed who seek opportunities in rural areas. To Committee on Agriculture and Forestry June 3. Reported to Senate June 10. Report No. 799. Passed Senate June 24. H. R. 12097—BLACK. Report No. 1359.

S. 4835—JOHNSON—Providing for the conveyance of the abandoned lighthouse reservation and buildings, including detached tower, situate within the city limits of Erie, Pennsylvania, to the city for public-park purposes. To Committee on Commerce June 6. Reported to Senate June 9. Report No. 789. Passed Senate June 24. H. R. 12593—SHREVE.

H. R. 12251—JAMES—Providing for the conveyance of the Portage Entry Lighthouse Reservation and buildings to the State of Michigan for public-park purposes. To Committee on Interstate and Foreign Commerce May 23. Reported to House June 22. Report No. 1689. Passed House, amended, July 1. Reported to Senate July 7 without amendments. Passed Senate, July 11.

S. 4947—COSTIGAN—Providing emergency financing facilities for unemployed workers to relieve their distress, to increase their purchasing power and employment, and for other purposes. Referred to Committee on Manufactures July 1. H. R. 12885—LA GUARDIA.

S. Doc. No. 84—Report of the United States Tariff Commission, transmitting, in response to Senate Resolution 95, a report of its investigation of the effect of the depreciation in the value of foreign currencies upon the importation into the United States of mechanically ground wood pulp, chemical wood pulp, unbleached, bleached, and pulp woods. Printed with illustrations.

H. Con. Res. 36—WEST—Creating a joint Congressional committee, to be known as the joint committee on economy. To Committee on Rules, July 11.

S. Con. Res. 34—MCKELLAR—To create a joint Congressional committee of three Senators and three Representatives to look into ways of reducing expenditures of the Federal Government. To Committee on Appropriations, July 7.

H. R. 282—BULWINKLE—To appoint a select committee of seven members of the House to recommend such consolidation, abolishment and reorganizations of departments and offices as will result in governmental economy. Report due February 15, 1933.

Barrington Moore to Represent Association at Forestry Congress in Nancy, France

In response to an invitation extended by the French Government, The American Forestry Association has named Barrington Moore of the Ecological Society of America to represent it at the Congress of the International Union of Forestry Research Organizations to take place at Nancy, September 4 to 11, 1932.

The survey before the Congress will present the following subjects for discussion: (1) Forest Ecology and Silviculture; (2) Forest Utilization; (3) Tropical and Mediterranean Forest Problems; (4) Reforestation and Prevention of Erosion in the Mountains; (5) Pedological and Climatological Forestry; (6) Protection of the forests, including fire protection, physiological and cryptogamic diseases of forest trees and forest entomology.

A number of field trips are planned preceding, during, and following the Congress and offer an opportunity for the members to study at first hand the principal types of French forests and their methods of treatment and care.

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trees compete so severely for moisture as well as sunshine.

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QUESTION: When was the last national forest created out of the public domain, and what forest was it?—F. B. T., Wisconsin.

ANSWER: The Humboldt National Forest in Nevada was created on April 1, 1911, and is probably the last one to be created out of the public domain. Practically all of the national forests were created by presidential proclamation prior to March 4, 1907, when an amendment to the agricultural appropriation bill was passed to take away from the President the privilege of so creating national forests in a number of western states. Rather than veto the act, President Roosevelt called for the papers pertaining to all of the proposed national forests then under consideration and signed them. For sometime afterwards men were busy perfecting the boundaries and eliminating portions which were not truly of forest character.

QUESTION: In AMERICAN FORESTS for June, 1931, Mr. McNeil has a diagram of an herbarium. He has shown two leaves. Why the two leaves? Wouldn't one be sufficient?—A. R. B., Pennsylvania.

ANSWER: This may be for several reasons. One may need two or more leaves in order to show the characteristic shapes and sizes of the leaves found on a given tree. For example, sassafras and mulberry would have to have two to four leaves to show the typical forms. Also, it is desirable often to show the upper side and the lower side of a leaf.

QUESTION: How much moisture is drawn up by a tree approximately fifty years old?—C. G. D., Missouri.

ANSWER: According to European records, a beech tree fifty or sixty years old will use about five and a half tons of water or in the neighborhood of 1,125 gallons in the course of an ordinary growing season. A birch tree of about the same age has been reported to use as much as forty-five gallons during a single hot day. Other European records show that a stand of birch trees fifty or sixty years old growing densely will use over a thousand tons of water a year. Pine trees use only about one-third as much water as broadleaf trees. Each species of tree has its own characteristics with regard to water demands.

MINONG--THE FLOATING ISLAND

(Continued from page 462)

Royale. This leaves one to wonder if this metal was procured from the island, or if there was another source of supply long since lost to the world.

In 1852 more modern mining was begun and continued as late as 1877, the abandoned mines being in evidence both on the north and south sides of the island. In the early '70's there was taken from one of these mines one of the largest pieces of copper ever mined, weighing upwards of 5,300 pounds—an immense mass of pure copper. This had originally been uncovered by miners of a much earlier date but with no means of getting it to the surface they were compelled to abandon it. Subsequently this was raised and brought intact to Detroit where it was exhibited on the lawn of the city hall for a considerable time.

During the progress of these mining operations the miners and their families numbered several hundred, but following their departure the island has been totally uninhabited during the winter seasons save as now and then a trapper might remain for taking fur. During the season of navigation there are to be found several small settlements of commercial fishermen who come to the island with the breaking up of the ice in the early spring and remain until the freezing of the lake in the fall puts an end to further fishing.

IMPROVING MICHIGAN'S TROUT STREAMS

(Continued from page 454)

or boulders, attention should be paid to the construction methods, as briefly outlined in the preceding description given of log and stone dams.

The current deflectors are of several designs, each meant to accomplish its own purpose in a particular situation in the stream. The simplest type is the *wing-deflector* (Figs. 3 and 4), which throws the current to one side of the stream (preferably the shady side). The *A-deflector* (Fig. 5) throws the water to both sides, forming a hole on each side; it is recommended for use where two small pools have already been started on opposite sides of the stream. The *V-deflector* concentrates the current in the stream center, producing a deep hole and a long, attractive riffle. If it be desired to accentuate the length of the riffle, or to point the current to some particular spot downstream, the *Y-deflector* (Fig. 6) is used. The straight logs also prevent the undermining of the end of the V.

Making deep pools, gravel riffles and weed beds is all to the good, but does not complete the improvement of the stream for trout. Actual cover is also needed. It is usually sound practice to combine deflectors and log covers, such as the triangle cover (Fig. 7) or the square cover (Fig. 8). A small shallow pool with a covered hiding place is more acceptable to trout than a large open pool. The covers may be built either in midstream below a V- or a Y-deflector, or against a bank, below a wing-deflector. They must be firmly built and bound together with heavy wire, and thoroughly staked. They should be built into a large front log set crosswise of the current along the upper edge, for this log turns the current down to churn out a hole beneath the cover, and will prevent the whole device from dropping to the bottom when it finally waterlogs.

The *raft cover* (Fig. 9) may be built anywhere, but is especially suited to stream bends. A large front log may be used when a hole under the cover is desired. The *boom cover* (Fig. 10) is of especial service in bends where

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We are always glad to cooperate with our readers in securing for them the latest prices, catalogues and other specific information. Let us help you.

SERVICE DEPARTMENT

The American Forestry Association

1727 K St. N. W.

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sand or silt is being washed into the stream. It is made by first constructing the boom across the stream to catch a large amount of floating material thrown into the stream above. When enough drift-wood is trapped, the upper end of the boom is swung over so as to enclose all the material in the bend, up against the formerly eroding bank. The two ends of the boom are then staked in place or wired to the shore, preferably so as to allow enough rising in high water to prevent the drift-wood from being carried out. A floating raft cover can also be used in such eroding beds. It also will serve here as a fine trout cover, as well as a bank protector.

The improvement of pool conditions, which may have important accessory effects upon food, shelter, and spawning conditions, by no means exhausts the possible methods of making our trout streams more productive. Many questions other than the ones discussed are involved in the managing of trout waters. The planting of shade, the improvement of spring runs, and the care of weed beds are some of these, while others relate to the care, administration and harvesting of the trout crop.

ANCIENT MAYAS BURNED THEIR FORESTS

(Continued from page 443)

every repetition of this cycle the land became poorer and the crop smaller, until the area was covered with coarse grass and unfit for other crops. It was necessary then to find more virgin forest to destroy before further crops could be grown.

The following modern Mayan prayer, from *The History of the Maya*, to his ancient gods is expressive of his hereditary sentiments and fears regarding the destruction of the forest: "O God, my mother, my father, Huitz-Hok, Lord Hills and Valleys, Che, Lord Forest, be patient for I am about to do as my fathers have ever done. Now I make my offering to you that you may know that I am about to trouble your soul, but suffer it, I pray you. I am about to dirty you—to destroy your beauty. I am going to work you that I may obtain my daily bread. I pray you suffer no animal to attack me, nor snake to bite me. Permit not the scorpion nor wasp to sting me. Bid the trees that they fall not upon me, and suffer not the ax or knife to cut me, for with all my heart I am about to work you."

There was one phase of Mayan history for which archaeologists have found no adequate explanation. That was the wholesale abandonment of the cities of the southern portion of the Maya area, and the emigration of whole populations to Yucatan. This emigration occurred during the 6th century A. D. Various explanatory theories have been advanced; for example, epidemic disease, climatic changes, war, earthquake, religion, or soil exhaustion. Wholesale soil depletion resulted from repeated cycles of cropping and burning in excess of the capacity of the forest to reproduce and replenish soil fertility. Once a whole area was so depleted by the demands of a great population, the only alternatives were starvation or emigration. The same process is going on among the Mayas of Yucatan today on a small scale, and would probably result in widespread soil exhaustion if the population were anywhere near as large as it was a thousand years ago.

The "New Empire" of the Mayas in Yucatan had already started on a period of decadence at the time of the Spanish conquest. Among the Maya of today the glory of their ancestors is but a vague memory.

Is it not possible that the story of the Maya's rise and fall may carry a lesson for modern advocates of periodic forest burning?

WHO'S WHO

Among the Authors in This Issue



Arthur M. Hyde

ARTHUR M. HYDE (*The Cost and Cure of Erosion*) is a national figure. He is Secretary of Agriculture of the United States and under his Department the National Forests are administered. A graduate of the University of Michigan and Iowa State University, he practiced law at Princeton, Missouri, for many years, coming to Washington in 1928 as a member of President Hoover's Cabinet.

A. A. WEBSTER (*Minong—The Floating Island*) of Detroit, is an Honorary Member of the Isle Royale Protective Association and an enthusiastic supporter of its claim to National Parkhood.

EDWARD R. WARREN (*Twenty Years in a Beaver Pond*) lives at Colorado Springs, Colorado, and has written and published much on ornithology and mammalogy.

ARTHUR C. RINGLAND (*Land Utilization and the Unemployed in Holland*) is a leading American forester, recently returned from Europe where, at Geneva, he served as America's representative in the Foreign Agricultural Service. Graduated from Yale Forest School in 1905, Mr. Ringland has made a distinguished record in his profession and has been chosen by his Government for service in important official posts. He is a native of New York.

ROBERT M. RILEY (*Ancient Mayas Burned Their Forests*) graduated in forestry from the University of California in 1922 and is a resident of Berkeley.

ANNA WORTHINGTON COALE (*On the Trail of Lost River*) makes her home at Pike, New Hampshire, where on lake Armington she conducts "Tahoma"—a delightful camp for girls.

JOHN R. GREELEY and **CLARENCE M. TARZELL** (*How Michigan Is Making Better Trout Streams*) are of the staff of the Institute for Fisheries Research of the University of Michigan, at Ann Arbor, and are enthusiastically engrossed in the task Michigan has set herself to better her fishing streams.

HENRY VAN DYKE (*Under the White Birches*), of Princeton, New Jersey—distinguished American author, soldier, statesman and divine. The man who wrote "Little Rivers" needs no further introduction here.

ETHEL ROMIG FULLER (*High Jump*) is a poet who lives at Portland, Oregon.

ALFRED M. BAILEY and **F. R. DICKINSON** (*Filming Feathers*) of Chicago. The first is Director of the Chicago Academy of Sciences and the second, one of its Scientific Governors—both are known for their outstanding achievements in exploration and the picturing of difficult phases of wild life.

G. H. COLLINGWOOD (*Forestry in Congress*) is the Forester of The American Forestry Association. **WAKELIN MCNEEL** (*A Forest Page for Boys and Girls*) is a leader in club work of Wisconsin and makes his headquarters at Madison.

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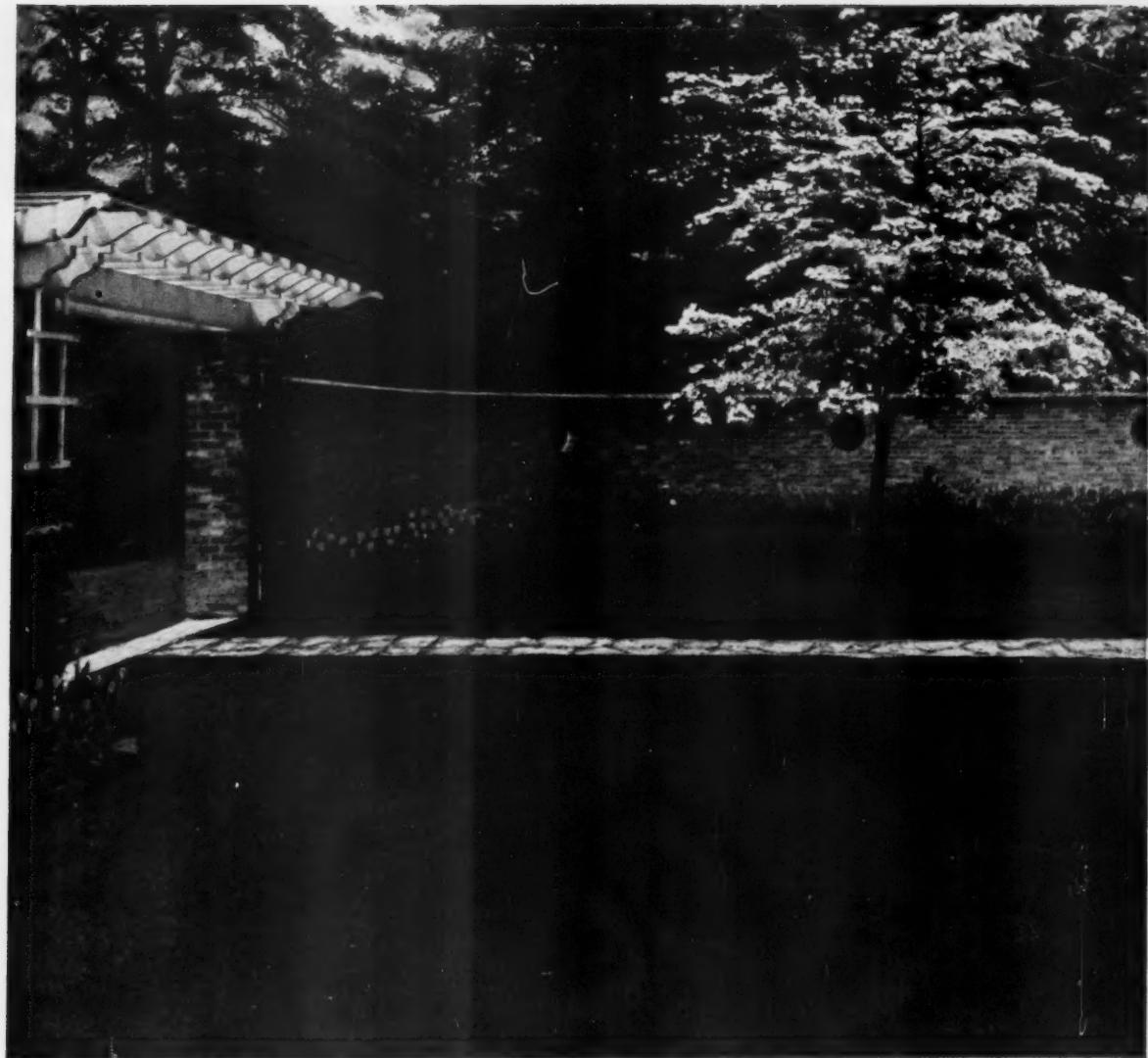
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